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A HANDBOOK

JOHNS-MANVILLE



BUILDING



MATERIALS



*For the convenience of
Army and Navy Engineering Personnel*



THIS handbook is designed as a time-saving reference guide on Johns-Manville building materials for use by busy Army and Navy engineers. A glance at the index will show the wide range of products Johns-Manville manufactures for construction and post war maintenance requirements. A brief description is given of each product with data for ordering as well as the current Federal Specification covering the material. You will find that it is generously illustrated with photographs of the materials and diagrams of their application. The application instructions in this book have been much condensed. However, full instruction details accompany the materials, and additional data may be obtained from the nearest J-M office. Because of the necessity of securing proper materials of proven quality either for new construction or for maintenance and repair of existing structures, we believe the engineer in the armed forces will find this handbook serviceable and authoritative.

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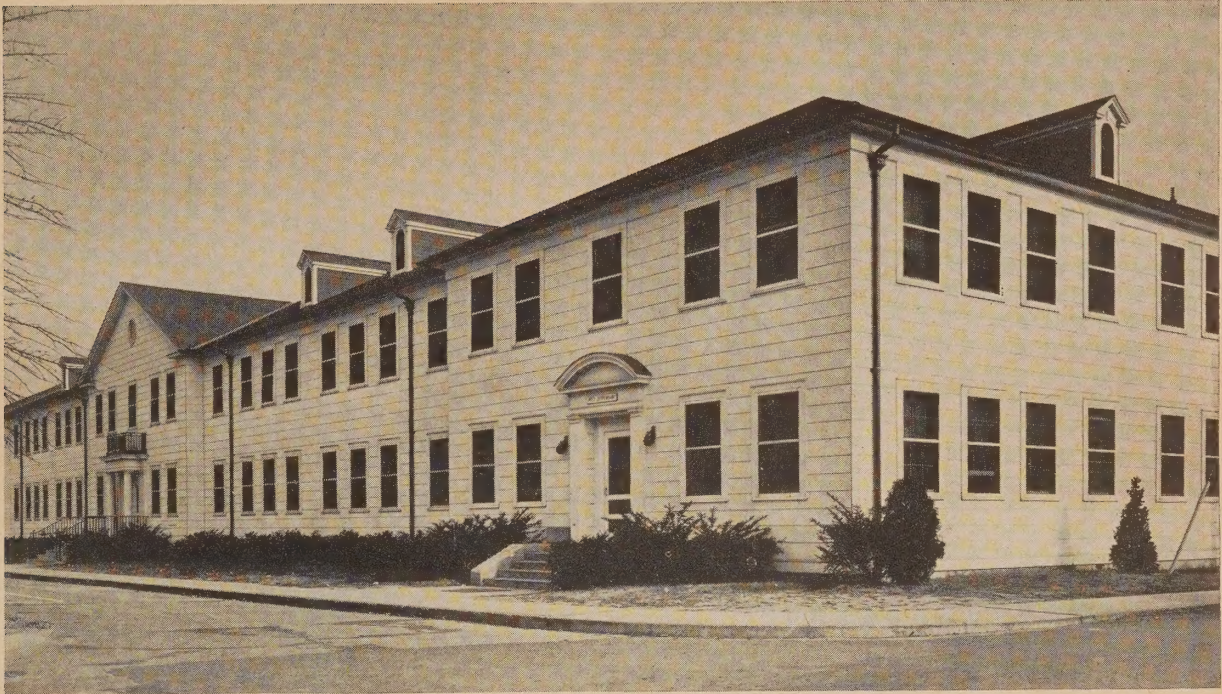
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Administration Building at a U. S. base. J-M Asbestos Siding Shingles on exterior walls.

J-M ASBESTOS SIDING SHINGLES

Uses

Johns-Manville Asbestos Siding Shingles are being extensively used for siding Army and Navy barracks, hospitals, offices, defense homes and other types of new buildings. Also they are used for re-siding old buildings where they can be applied directly over the existing clapboards or shingles. This rehabilitation of old buildings not only pro-

longs their usefulness but adds greatly to their appearance and structural stability.

In new construction J-M Asbestos Siding Shingles can be applied directly to wood sheathing, J-M Weathertite Sheathing (see page 21) or Gypsum Sheathing. The use of Weathertite Sheathing helps conserve critical lumber.

General Description

J-M Asbestos Siding Shingles are made of asbestos fiber and cement. They cannot burn and therefore greatly reduce the fire hazard; they are ready for use as soon as applied, hence reduce construction time. They never require preservative treatment. Unaffected by snow and ice, hot sunshine or tropical rains they will last with little, if any, maintenance as long as the building stands.

Nail holes are factory punched. The shingles are easily and accurately cut by using an asbestos shingle cutter. Where necessary, additional nail holes can be punched with the cutter. Shingle Cutters are available in almost all sections of the

country. Ask the J-M representative or nearest J-M office where you can obtain one locally.

Costs of completed jobs are low, frequently less than painted wood siding, because of low material costs and rapid application. Carpenters the country over are familiar with their application.

If it is desired to camouflage or otherwise change the color of the standard shingles, this can be done by applying a heavy brush coat of boiled linseed oil to all exposed surfaces and edges, giving additional coats to any suction spots which may remain. Allow to dry at least 24 hours and then apply any good lead and oil paint.

Designs and Colors

Johns-Manville Asbestos Siding Shingles are furnished with pressed-in texture resembling weathered wood in two designs (see below).

Colors—Gray, White and special Camouflage Colors for War construction

Size—12" x 24" by approximately $\frac{5}{32}$ " thick.

Weight—Approximately 185 lbs. per square.

Unit—Square (sufficient material to cover 100 sq. ft. of siding area).



Asbestos Siding Shingles. Wavy edge, grey.



Asbestos Siding Shingles. Straight edge, white.

Application

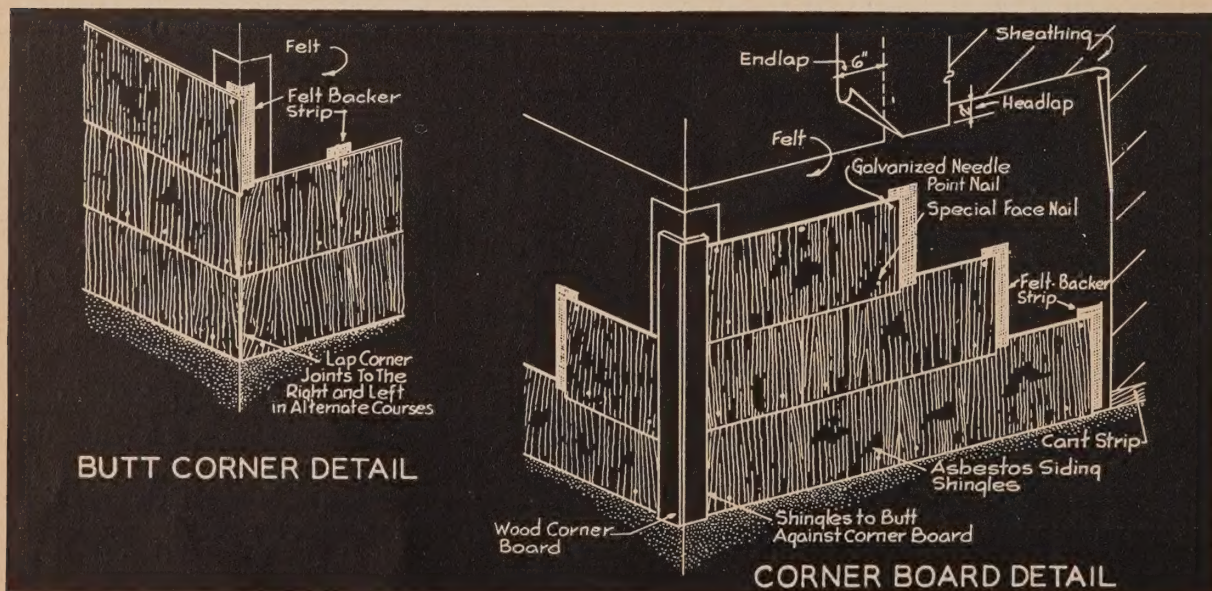
Over Wood Sheathing

First apply one layer of J-M No. 15 Asphalt Saturated Rag Felt with horizontal joints lapped 2", vertical joints lapped 6" (see diagram below).

First Course: Apply $\frac{1}{4}$ " x 2" cant strip. Snap chalk line $11\frac{5}{8}$ " above bottom edge of cant strip.

Start with a full shingle with top edge at chalk line so that butt edge projects $\frac{3}{8}$ " below cant strip to form a drip. Place backer strips as shown in drawing with top edge of strip $\frac{3}{8}$ " above shingle.

Second and succeeding courses: Start with half shingle placing face nails through shingle and

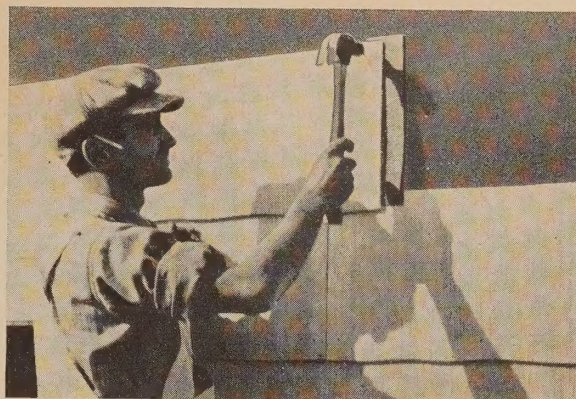




dropping, until nails rest on top of preceding course. This automatically gives correct exposure.

For application over Johns-Manville Weathertite Sheathing or Gypsum Sheathing a barbed nail and metal clip are used—consult the Johns-Manville representative.

Right: Asbestos Siding Shingles are quickly and easily applied. Any carpenter can apply them.



Packaging

Shingles are packed in cardboard protected bundles containing 19 shingles each, 3 bundles per

square (sufficient shingles to cover 100 sq. ft. sidewall area).

Federal Specification

Federal Specification SS-S-291 dated May 7, 1935, covering Asbestos Shingles was published prior to the general use of Sidings which are not included therein. A specification to cover Asbestos Siding Shingles is in process of preparation.

Currently Purchasing Officers therefore generally call for 12" x 24" Asbestos Siding Shingles conforming with Federal Specification SS-S-291 where applicable, specifying color, texture and butt edge design desired for the particular job.

Ordering

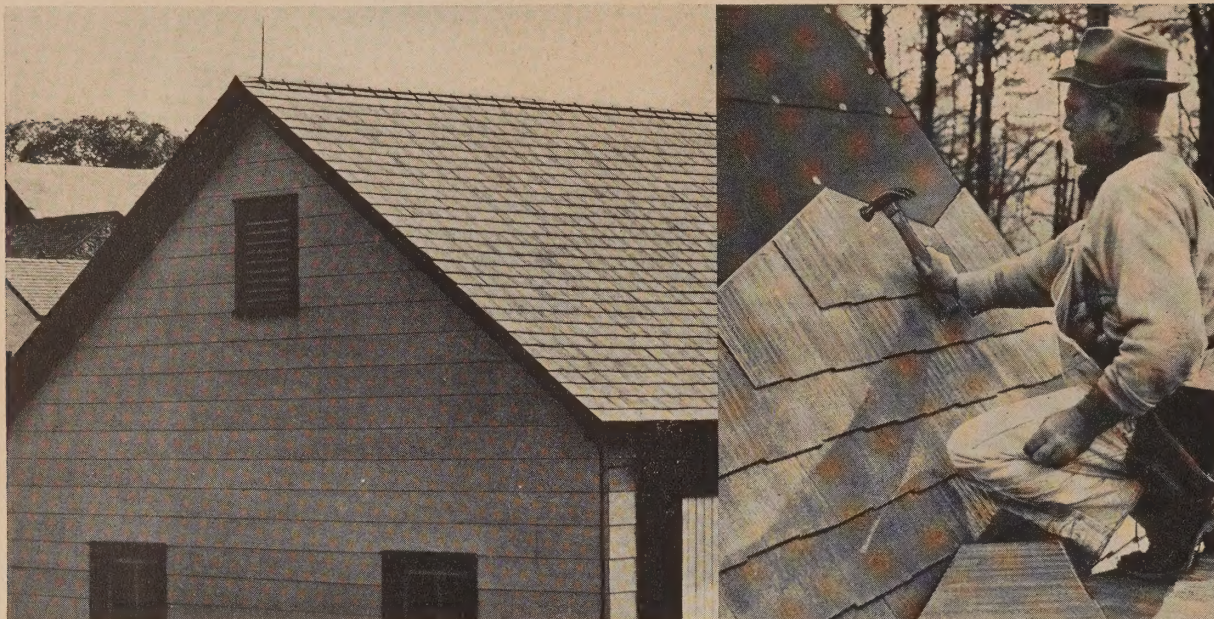
Estimate in square feet the area to be covered, divide total area in square feet by 100 to determine the number of squares of Siding to be ordered. Order by squares not by bundles. Order from local Johns-Manville representative, or order through Johns-Manville District Office in which territory you are located (see map on page 2).

Sufficient Backer Strips and Face Nails will automatically be shipped with the shingles but purchasing officer should specify whether Face Nails should be 1" long for new construction or 1½" for re-siding.

When applied over Wood Sheathing in new

construction purchase approximately ¾ lb. of 1¼" large head Galvanized Needle Point Roofing Nails per square of shingles for the heads of the shingles. For residing, purchase approximately 1 lb. of 2" length per square of shingles. Government purchasing officers can obtain nails more quickly by buying directly from nail manufacturers and utilizing Army or Navy procedure for purchasing.

If applied over Weathertite Sheathing or Gypsum Sheathing consult Johns-Manville representative regarding special barbed nails and metal clips. If Asphalt Saturated Rag Felt is desired for underneath the shingles see description on page 20.



Fireproof J-M Asbestos Roofing Shingles on Army barracks. Any carpenter can apply them.

J-M ASBESTOS ROOFING SHINGLES

Uses

Johns-Manville American Colonial Asbestos Roofing Shingles, (No. 607), have been applied on numerous new Army and Navy buildings of all types including barracks, mess halls, hospitals and

officers' quarters. Also, they are widely used to re-roof old buildings or to re-roof comparatively new buildings on which the original roofing had been of a temporary nature.

General Description

J-M American Colonial Asbestos Shingles are made of asbestos fiber and cement. They cannot burn and, therefore, greatly reduce the fire hazard, particularly that of roof communicated fire. Ready for use as soon as applied, and require no preservative treatment at any time. Unaffected by snow, ice, hot sunshine, tropical rains or other climatic conditions which shorten the life of most other roofing materials. They will last as long as the building stands.

The unique design of the No. 607 shingle results in saving of material, saving in weight and speeding up of application. Costs of application are low. For a durable lifetime roof, this shingle undoubtedly has the lowest cost when measured in terms of dollars per year of service.

Nail holes are factory punched. For cutting and additional punching on the job an asbestos shingle cutter does the work easily and accurately. Cutters are available in almost all sections of the country. Ask the Johns-Manville representative or nearest Johns-Manville office where you can obtain one locally. Application is simple and rapid. Any carpenter can apply them.

Nothing in these shingles will contaminate water, and roofs covered with them may be used for water collection after allowing a few minutes drainage to carry off any dust or dirt.

Copper should be used for flashings and valley treatment. If copper is not available the J-M American Colonial method of flashing has been developed by Johns-Manville (see page 11).



Design and Colors

A wide range of colors is available, including special camouflage shades. All colors except Natural Gray are obtained by pressing into the asbestos cement base, fine Ceramic granules which insure stability of color. Every shingle is individually pre-tested at the factory for granule adhesion. A pleasing wood grain texture effect is pressed into the shingle. This, combined with the staggered butt edge, makes each shingle appear the equivalent of five individual shingles, yet retains the economy of labor and material of the larger size unit.

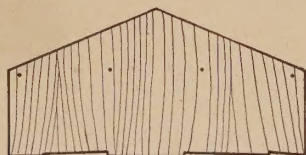


Diagram of No. 607 Shingle.

Special shingles for starting course (No. 636 Starters), and special shingles for finishing Hips and Ridges (No. 697 shingles), are available in



Note graining and texture of weathered wood.
pre-punched form.

Colors—Natural Gray, Black Blend, Red Blend, Green Blend and special camouflage colors.

Size—30" long by 14" high at the peak by approximately $\frac{3}{16}$ " thick.*

Weight—Natural Gray approximately 260 lbs. per sq., other colors approximately 290 lbs. per sq.

Unit—Square (sufficient material to cover 100 sq. ft. of roof area).

* On the Pacific coast shingles are similar in shape but differ slightly in dimensions. Consult nearest J-M office.

Application

Over Wood Sheathing

J-M No. 607 Asbestos Shingles should not be used where the pitch is less than 5" per foot.

First apply a cant strip; then a layer of saturated felt with horizontal joints lapped 4", and vertical joints lapped 12".

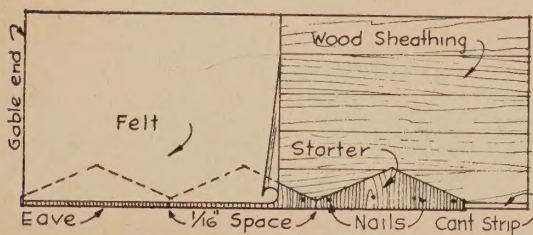


Fig. 1 STARTER COURSE

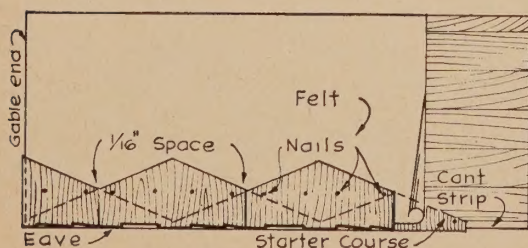


Fig. 2 FIRST COURSE

Starter Course: Lift up felt at eaves and begin by laying a full size No. 636 Starter Shingle overhanging the eaves and gables approximately 1". Succeeding starters to be laid parallel to eaves and spaced $\frac{1}{16}$ " apart. Then lay felt back over starter course.

First and succeeding courses: Begin at gable end with a half shingle laid directly over starter course, succeeding shingles to be laid parallel to eave and spaced $\frac{1}{16}$ " apart.

Second course is started with full sized shingle so that shoulder coincides with the point of shingle in underlying course, giving an automatic 6" exposure as shown in diagram below.

Remaining courses to be started with alternate full and half shingles. To prevent cocking of shingles avoid driving nails too tightly.

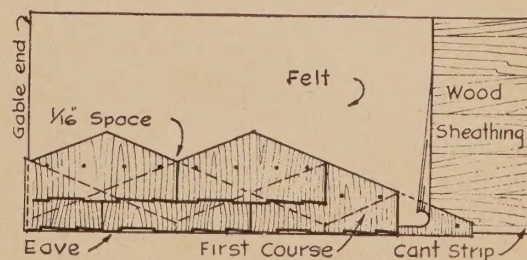


Fig. 3 SECOND COURSE

Packaging

Main body (No. 607) shingles are packed in cardboard protected bundles containing 20 shingles each, 4 bundles per square. Starters (No. 636) are packed in bundles containing 20 pieces each,

sufficient for 50 lineal feet. Hip and Ridge Shingles (No. 697) are packed in bundles containing 17 pieces, each bundle sufficient to shingle 5 lineal feet of hip and ridge.

Federal Specification

Federal Specification SS-S-291, dated May 7, 1935, was published prior to the general use of this modern design Roofing Shingle. This specification is now being revised to include this type shingle as Type E under the same specification. Purchasing Officers, therefore, generally call for shingles to conform to requirements of Fed. Spec. SS-S-291 dated May 7, 1935, with the following additional requirements in the inquiry:—

'Except shingles are to be 30" long by 14" wide at the center, tapering to 8" width at the ends, uniform in thickness approximately $\frac{3}{16}$ ", weighing approximately 290 lbs. per square, 80 shingles per square (Johns-Manville No. 607 American Colonial or equal).' *

*On the Pacific coast, shingles are similar in shape but slightly different in dimensions. Consult nearest J-M office.

Ordering

Estimate in square feet the area to be covered. Divide total area in square feet by 100 to determine the number of squares of roofing shingles to be ordered. Order by squares of Shingles, and lineal feet of Starters and Hips and Ridges. Do not order by bundles. Order from local Johns-Manville Representatives, or order through Johns-Manville District office in whose territory you are located (see map on page 2).

Nails for application should be ordered separately. For new construction use $1\frac{1}{4}$ " Galvanized

Needle Point Nails, and for re-roofing use $1\frac{1}{2}$ " or 2" Galvanized Needle Point Nails, depending upon the character of the old roof to be covered. On new construction approximately $1\frac{3}{4}$ lbs. of nails are required per square, and in re-roofing 2 lbs. of $1\frac{1}{2}$ ", or $2\frac{1}{2}$ lbs. of 2" Galvanized Needle Point Nails per square should be ordered.

Government Purchasing Officers can obtain these nails more quickly by buying from nail manufacturers directly, and by using Army or Navy procedure for purchasing.



Group of buildings at U. S. Army Camp. Barracks in background are roofed with J-M 607 American Colonial Asbestos Shingles. Shelters in foreground are roofed with J-M Slatekote Roll Roofing (see page 17).



American Colonial Asbestos Felt and Cement combined into a durable, long-lived flashing.

J-M AMERICAN COLONIAL FLASHING SYSTEM FOR ASBESTOS SHINGLES

Uses

Johns-Manville American Colonial Asbestos Felt and American Colonial Roof Cement have been developed by Johns-Manville as a war measure to replace copper, galvanized iron or other metal valley and flashing materials. They are combined in a system which permits their use in valleys, crickets, gutters, and at the junction of wall and roof surfaces, or other places where metal would, in

normal times, be used for this purpose.

This system of flashing is by no means an untested innovation. It has been used successfully for many years as a flashing material for Built-up roofs in valleys and base flashings, in parapet walls and chimney flashings and other junctions of wall and roof surfaces. It will furnish a weather-tight, long-lived flashing for Asbestos Shingles.

General Description

J-M American Colonial Felt is made on a base of Asbestos Felt which has been saturated and then coated with a special asphalt. It is extremely flexible.

J-M American Colonial Roof Cement is a tenacious setting Cement made from asphalt and other ingredients, and has been demonstrated through many years experience to be one of the most lasting

"Flashing" Cements on the market.

The American Colonial Felt is furnished in rolls 32" wide by 81' long containing 216 square feet. Weight is approximately 70 lbs. per roll.

The American Colonial Roof Cement is furnished in containers of 25, 50, 150 and 300 lbs. net weight, with gross shipping weights of approximately 30, 60, 165 and 335 lbs. respectively.

Application

(See diagram opposite)

Install a continuous wood strip in valleys to minimize angle of break and to provide a solid backing and level out with J-M American Colonial Roof Cement at edges of strip to eliminate sharp corners.

Apply valley linings with two layers of felt. When piecing is unavoidable lap felts 6" and cement together with J-M American Colonial Roof Cement, laying felt so water runs over the lap.

Cut first layer with a sharp linoleum knife to suitable width (minimum 12") and lay directly over roof surface, forming it into the angle and nail along edges, $\frac{3}{4}$ " back from edge with 1" long, large

head roofing nails on not more than 6" centers. Completely cover this layer with J-M American Colonial Roof Cement, troweling it to a uniform thickness of approximately $\frac{1}{8}$ ".

Cut second layer to suitable width (minimum 20"), embed into J-M American Colonial Roof Cement to thorough contact and nail as above. (See Fig. 1 opposite).

This American Colonial Flashing system can be used in place of metal flashing at chimneys, dormers, chimney crickets, gutters and at heads of doors and windows. (See Fig. 2, 3, and 4 on the opposite page).

Packaging

Johns-Manville American Colonial Felt is packaged in two square rolls, wrapped with tough paper and suitably labeled to identify it.

Johns-Manville American Colonial Roof Cement is packaged either in metal drums or War Emergency type containers of fibreboard material.

Federal Specification

There is no Federal Specification covering J-M American Colonial Felt or Roof Cement.

Ordering

Estimate the number of square feet of American Colonial Felt that will be required for the various places this material is to be used. Divide the number of square feet of Felt by 216 to determine the number of rolls of Felt to be ordered. Felt should be ordered by rolls, not by square, square feet or lineal feet.

Estimate the number of pounds of American Colonial Roof Cement that will be required on the

basis that fifty pounds of cement will trowel out to cover approximately 100 square feet (one layer). The American Colonial Roof Cement should be ordered by pounds and the size container specified in which it is to be packaged. It should be ordered in suitable multiples of the container sizes desired. Example—2-300 lb. drums, 1-150 lb. drum, 1-50 lb. drum, in order to make a total of 800 lbs. required.



APPLICATION DETAILS

J-M AMERICAN COLONIAL FLASHING SYSTEM

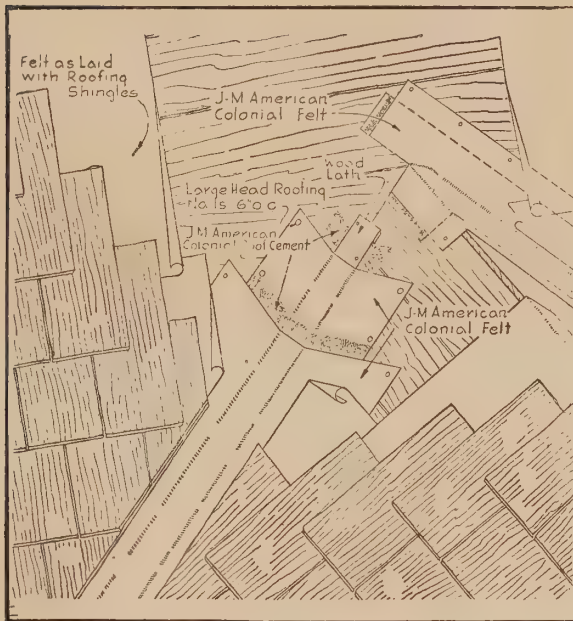


Fig. 1
VALLEYS

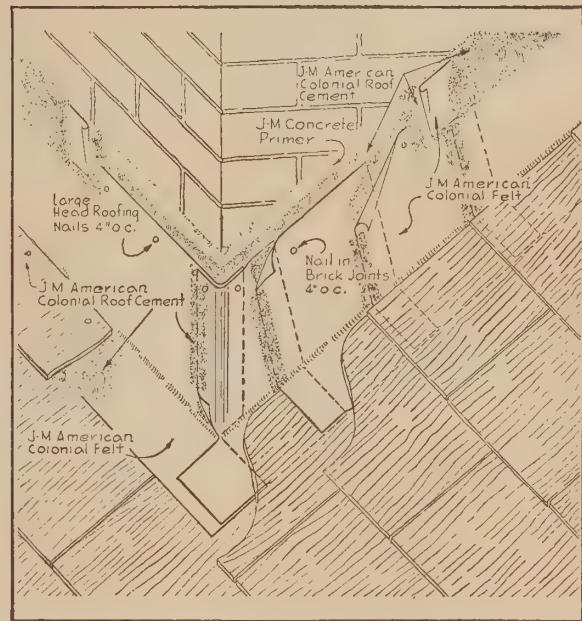


Fig. 2
CHIMNEYS

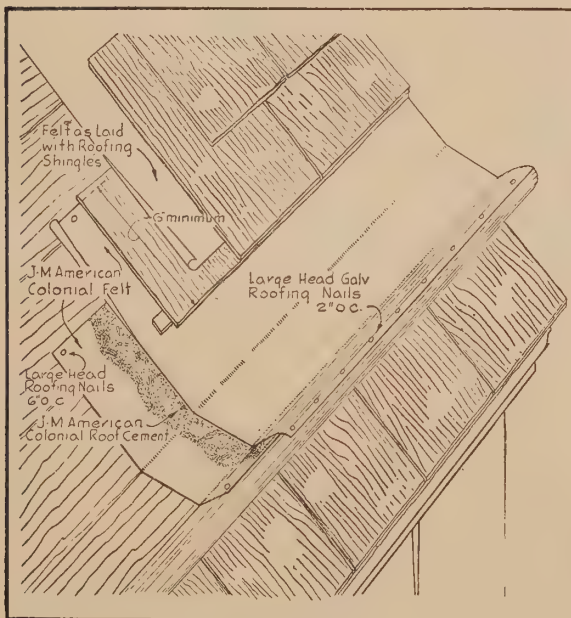


Fig. 3
GUTTERS

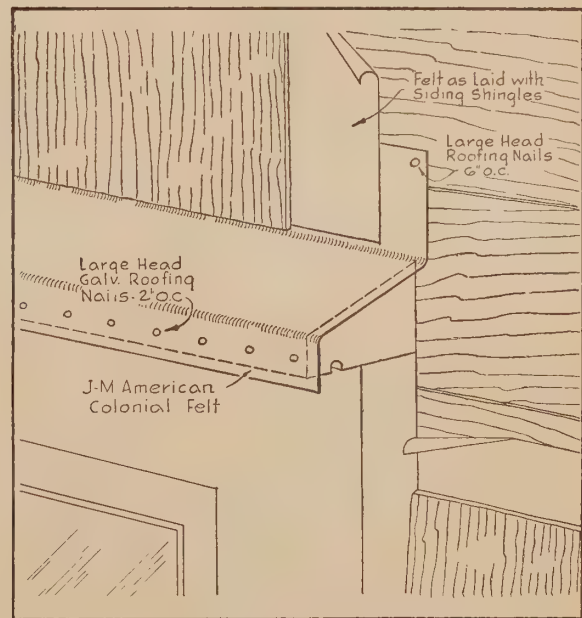


Fig. 4
HEADS OF DOORS AND WINDOWS



Barracks of the U. S. Marine Corps roofed with J-M Thick Butt Asphalt Shingles.

J-M ASPHALT ROOFING SHINGLES

Uses

Johns-Manville Thick Butt Asphalt Roofing Shingles are being used throughout the United States by the Army and Navy both for roofing new construction and for re-roofing older buildings acquired by the armed forces. They are used on roofs having a pitch of 4" to the foot or more. Application is easy and rapid. Any carpenter can apply them using conventional tools.

Where the roof pitch on a piazza or shed addition to a central structure is insufficient for the proper use of J-M Thick Butt Asphalt Shingles such roofs should be covered with J-M Slatekote Roll Roofing (see page 17) which like Thick Butt Shingles is mineral granule surfaced, and comes in a range of colors that will harmonize with the Thick Butt Shingles on the main roof.

General Description



J-M Asphalt Thick Butt Shingles furnish a workmanlike, weather-tight roof.

Johns-Manville Thick Butt Asphalt Shingles are made on a selected Rag-Felt base, saturated and coated with high-grade asphalt and surfaced with mineral granules. They are scientifically designed to provide extra material on the portion that is exposed to the weather. The shingles are fire resistant and thus reduce the hazard of roof communicated fires. They carry Underwriters' Class C label. Are ready for use as soon as applied. Require no preservative treatment. Will last



ten years or more in northern climates, with some reduction in life where exposed to hot sunshine, high humidity and tropical rains.

Each unit is a strip representing three individual shingles. This saves time in application. Any carpenter can apply them. Easily cut with hand shears or knife.

For Flashings and valleys Johns-Manville Slate-

kote Starting Valley or Ridge Strips are available either in special narrow widths, or full 36" wide J-M Slatekote Roofing (page 17) can be cut to desired width.

Nothing in these products will contaminate water, and roofs covered with these materials may be used for water collection after allowing a few minutes drainage to carry off any dust or dirt.

Design and Colors

A wide range of colors is available including solid colors as well as blends made of several shades pre-assorted in the bundles. A special line of camouflage colors is also available. All colors are obtained by firmly embedding in the shingles coarse mineral granules with great color stability.

Size—36" long by 12" high—3 tabs. Thickness at butt approximately $\frac{1}{8}$ ".

Weight—Approximately 210 lbs. per square, including packaging materials.

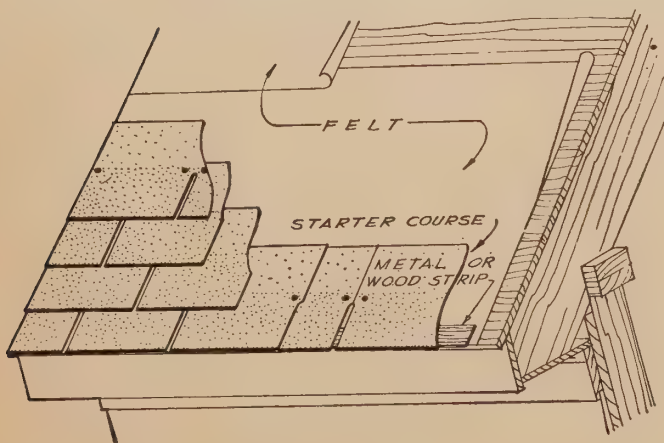
Unit—Square (Sufficient material to cover 100 square feet of roof area).

Application

Before applying shingles over wood sheathing apply a layer of J-M Asphalt Saturated Felt (see page 20) over entire deck with horizontal joints lapped at least 2", and vertical joints 4". The pitch of roof shall not be less than 4" to the foot.

Lay starting course with edge of strip projecting not more than $\frac{1}{4}$ " over gable rake, with cut-out down the roof and lower edge projecting not more than $\frac{1}{2}$ " over eave to form a drip edge. Over this lay another course with a strip from which $1\frac{1}{2}$

tabs have been cut with cut-outs down and butts flush with bottom edge of starting course, cut-outs of the over-laying course to come in center of tab of bottom course. Expose shingle 5" and nail in double-thick part of shingle, $5\frac{1}{2}$ " up from butt edge. Do not nail in the thin part. Nail each shingle with six nails, one 1" in from each end and one 1" on each side of each cut-out. Always nail from the center out, never nail at ends first. Lay with ends just touching.



Above: Diagram of a J-M Thick Butt Asphalt Shingle, showing the 3 shingle effect in a single unit.

Left: Diagram showing application of J-M Asphalt Thick Butt Shingles. Any carpenter can apply them.

Packaging

Johns-Manville Thick Butt Shingles are packed in cardboard protected bundles containing 40 shingles each (2 bundles totaling 80 shingles per

square). Starting, Valley or Ridge Strips furnished in rolls 36' long and widths of 9" or 12" in the South, or 9" or 18" in the North and East.

Federal Specification

Federal Specification SS-R-521, Type II, dated Aug. 1, 1933 covers Asphalt Shingles. This Specification has not been revised since the adoption by the Asphalt Roofing Industry of the Thick Butt type of shingle. It is therefore essential, when specifying these shingles, to provide the following Supplemental Specifications in the inquiry, approximately as follows:

'Shingles shall comply with Specification

SS-R-521, Type II, with the following additional requirements:— Shingles shall be 12" x 36" in size, 3 tab, 80 shingles weighing approximately 210 lbs. per square shipping weight, with butt portion of shingle weighing not less than 1 lb. per square foot. Color and texture as to be agreed upon by the buyer and seller (Johns-Manville 12" Thick Butt Strip Shingles or equal).'

Ordering

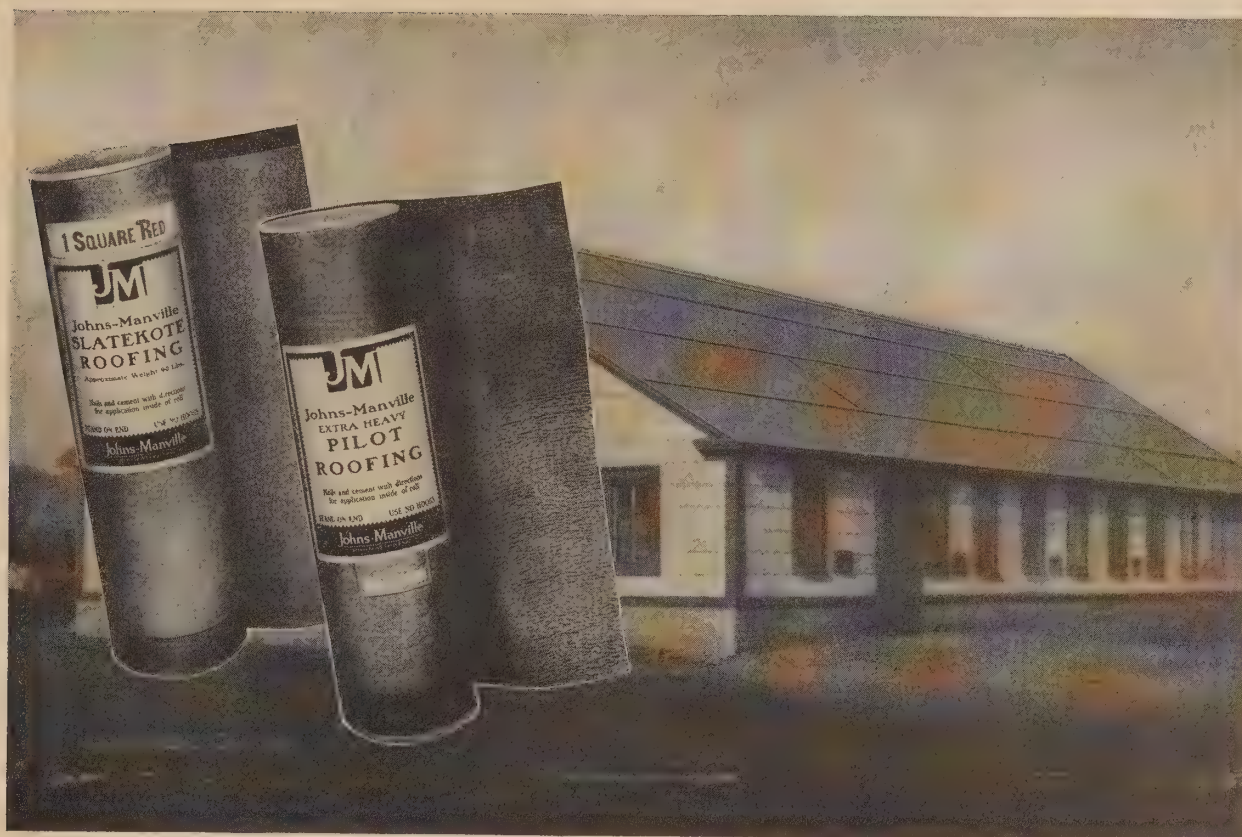
Estimate in square feet the area to be covered. Divide total in square feet by 100 to determine the number of squares of Roofing to be ordered. Order by squares of Shingles or rolls of Starter and Hip Strips. Do not order by bundles or square feet. Order from local Johns-Manville Representative or through Johns-Manville District Office in which territory you are located. (See map on page 2).

Nails for application should be ordered separately. For new construction use 1" Galvanized Roofing Nails, 11 to 12 gauge, with head $\frac{7}{16}$ " to $\frac{1}{2}$ ", and for re-roofing use same type nail, but $1\frac{1}{2}$ " to

2" long depending upon the character of the old roof to be covered. On new construction approximately 2 lbs. of nails are required per square, and in re-roofing approximately $2\frac{3}{4}$ lbs. of $1\frac{1}{2}$ ", or $3\frac{1}{2}$ lbs. of 2".

Johns-Manville does not sell or furnish nails for application of Asphalt Shingles. Government Purchasing Officers should obtain nails by buying from nail manufacturers directly, using Army or Navy procedure for purchasing.

J-M Asphalt Saturated Rag Felt for use underneath the Shingles, is described on page 20.



J-M Slatekote and Pilot Roll Roofings are quickly applied at low cost.

J-M ASPHALT ROLL ROOFING

Uses

Johns-Manville Slatekote Roll Roofing and Pilot Roll Roofing have a wide usage by the Army and Navy on pitched roofs where a shingled effect is not required. They are generally used where the

amount available to spend does not permit use of J-M Asbestos or Asphalt Shingles. Also since J-M Slatekote type is furnished in a range of colors, a colored roof appearance may be had at low cost.

General Description

Johns-Manville Slatekote and Pilot Roll Roofing are made on a base of selected Rag Felt saturated with high grade asphalt and then coated on both sides with a higher melting point weather resisting asphalt. In the Slatekote type, a layer of mineral granules is embedded in the top asphalt coating. These Roofings are fire resistant and thus reduce the hazard of roof communicated fires. They carry Underwriters Class C label. Slatekote (granule surface type) requires no preservative treatment.

Pilot (smooth surface type) should be coated with a good grade of roof coating every three or four years to insure maximum life. They will last ten years or more in northern climates with a somewhat shorter life in southern climates where exposed to hot sunshine, high humidity and tropical rains.

Since nothing in these products will contaminate water, roofs covered with them may be used for water collection after allowing a few minutes drainage to carry off any dust or dirt. They are fur-

nished in rolls 36" wide by 36' long, containing 108 sq. ft. (sufficient to cover 100 sq. ft. of roof area with 2" lap between courses).

Nails and cement for application are packed with rolls unless otherwise ordered.

Roofs are ready for use as soon as applied. Application is simple and experienced labor not too

essential. Necessary cutting can be done with an ordinary knife.

Because of their large covering capacity, application is fast, and labor cost low.

The use of these Johns-Manville Roll Roofings will give a satisfactory roof at about the lowest attainable cost.

Design and Colors

In J-M Slatekote Roofing colors available are Red, Green and Black, as well as special camouflage shades.

Smooth J-M Pilot Roofing is available only in the natural color of Black Asphalt. Both sides of J-M Pilot Roofing are coated with asphalt; one side is finished with a smooth mica finish and the other side with a veined talc finish. Either side may be exposed.

Size—Rolls 36" wide by 36' long. Slatekote has 2" unsurfaced selvage edge.

Weight—Slatekote approximately 90 lbs. per square—Heavy Pilot approximately 55 lbs. per square—Extra Heavy Pilot approximately 65 lbs. per square. Above weights include the nails and cement packed with the Roofing.

Unit—Square (sufficient material to cover 100 square feet of roof area).

Application

Do not apply Johns-Manville Pilot Roofing on inclines that are less than 2" to the foot or Johns-Manville Slatekote Roll Roofing on inclines less than 3" to the foot.

The wood roof sheathing (tongue and grooved preferred), over which roofing is to be applied, should be well seasoned stock, laid close and securely nailed.

Apply edging at all eave and gable ends by cutting strips of roofing wide enough to extend 4" on the roof proper and over edge of sheathing or fascia and project $\frac{1}{2}$ " to form a drip edge. Securely nail to fascia or edge of sheathing with large head nails spaced on 2" centers and on back edge of strip 12" on centers. (See Fig. A & B).

Thoroughly coat the 4" projection of the edging strip with lap cement and apply the first sheet of roofing over the edging strip flush with eave and gable end with black or selvage edge at top when using Slatekote Roll Roofing. Stretch the sheet smoothly and evenly, embedding it thoroughly in the lap cement over the edging strip and nail 2" apart $\frac{3}{4}$ " from lower edge of sheet. (See Fig. B).

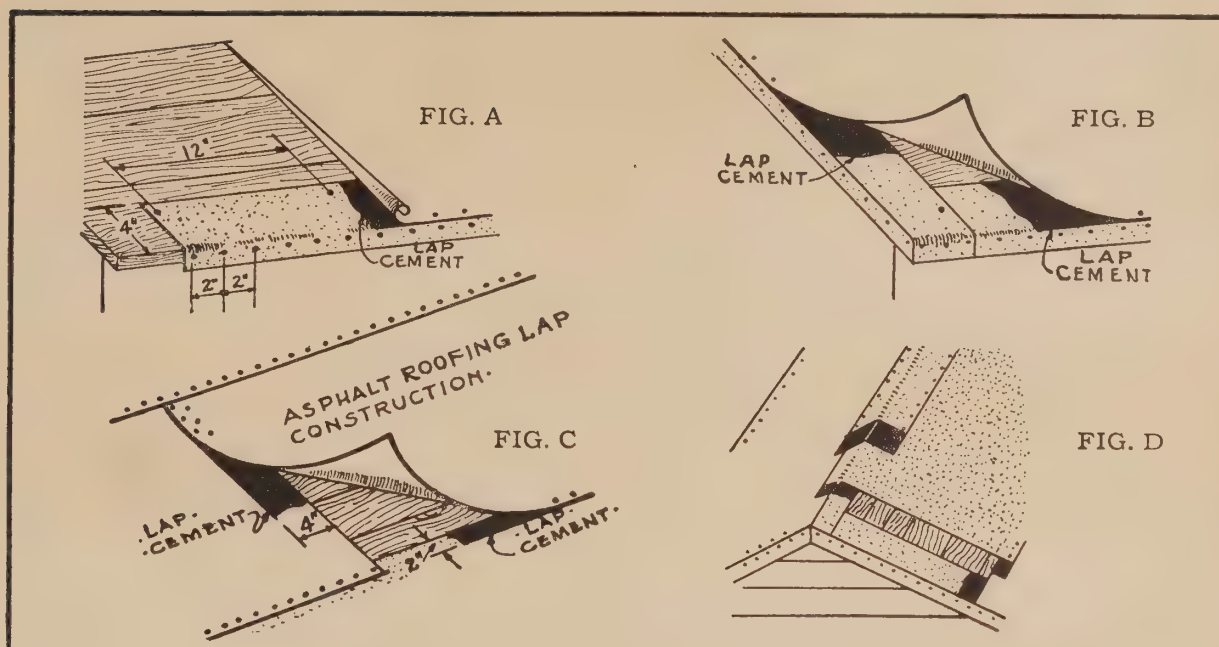
Drive a few nails $\frac{1}{2}$ " from upper edge to secure the sheet temporarily.

Start second course of sheets with a half length piece of roofing to break joints, nailing as before, this sheet to overlap the upper edge of the first sheet 2 inches.

The third course shall be started with a full length piece and so on alternately as in brick work. Lap all end joints 4" and horizontal joints 2".

At laps, raise the edge of second sheet where it laps over the first sheet and apply a thorough coating of lap cement, drop back second sheet and nail all laps with large head roofing nails beginning at center and proceed both ways toward ends, spacing nails 2" apart through center of horizontal laps or about $\frac{3}{4}$ " from lower edge of sheet and 1" apart in vertical laps, staggered. (See Fig. C). Cover exposed nail heads of Pilot Roofing with lap cement.

Continue laying each successive course exactly as described above, allowing the upper edge of top course to extend 3" over ridge and to be turned down, fastened and covered with a 9" wide strip of roofing as shown in Fig. D.



Packaging

J-M Slatekote and Pilot Roll Roofings are all packaged in units of one square and are wrapped with tough paper. Label and directions for appli-

cation are part of each wrapper. Nails and cement for application are packed inside the core of the roll. Rolls should be stored standing on end.

Federal Specifications

Federal Specification SS-R-521, Type I, dated Aug. 1, 1933, covers Johns-Manville Slatekote Roofing.

Federal Specification E-SS-R-501, dated Oct. 21, 1941, covers Johns-Manville 55 lbs. and 65 lbs. Pilot Roofing.

Ordering

Estimate in square feet the area to be covered. Divide total area in square feet by 100 to determine the number of squares of Roofing to be ordered. Order by squares, not by square feet, lineal feet or rolls. Order from Johns-Manville local representative or order through Johns-Manville District

Office in which territory you are located. (See map on page 2.)

Nails for application can be furnished with the Roofing. If, however, Roofing is desired without nails or without cement, or without both nails and cement, it can be so furnished if order so specifies.

J-M Asbestos Ready-to-Lay Roofing

In addition to Asphalt Rag Felt roofings, Johns-Manville manufactures a complete line of Asbestos Ready-to-Lay Roofings, which are made of asbestos-

fiber felts impregnated with asphalt. Furnished in sheets and rolls, smooth surfaced and mineral surfaced. See description on page 40.

J-M ASPHALT SATURATED RAGFELT FOR USE UNDERNEATH SHINGLES

Uses

Johns-Manville Asphalt Saturated Ragfelt is used underneath Asphalt and Asbestos Roof Shingles, as well as underneath Asbestos Siding Shingles where added weather-proofing is required. It is customary in all new construction work to use such a Felt at all times, although the use is optional when re-roofing or re-siding over old shingles.

Johns-Manville Asphalt Saturated Ragfelt is made of selected rags and paper which have been saturated with asphalt. No coating or surfacing is added. Two weights are available.

The No. 15 Grade weighs approximately 15 lbs. per 108 square feet, and is furnished in rolls 36"

wide by 144' long containing 432 square feet, which is sufficient to cover 400 square feet of roof or side wall area with 2" lap between courses. Shipping weight is approximately 60 lbs. per roll.

The No. 30 Grade weighs approximately 30 lbs. per 108 square feet, and is furnished in rolls 36" wide by 72' long containing 216 square feet, which is sufficient to cover 200 square feet of roof or side wall area with 2" lap between courses. Shipping weight is approximately 60 lbs. per roll.

No nails or cement are furnished with Asphalt Saturated Ragfelt.

The rolls carry Underwriters' Built-Up classification label.

Application

Details of application of Felt are shown in the application instructions shipped with the various shingle products with which Asphalt Saturated Ragfelt is used.

The rolls are packaged in units of 4 squares of

No. 15 Grade, or 2 squares of No. 30 Grade. The rolls are not wrapped, but end corners are turned in and fastened at the center with a paper label or a paper band suitably printed to describe and identify the material.

Federal Specification

Johns-Manville Asphalt Saturated Ragfelt meets the requirements of Federal Specifications HH-F-191A dated Sept. 11, 1942, and E-HH-F-191a dated

Dec. 23, 1942.

The No. 15 Grade corresponds to Type I. The No. 30 Grade corresponds to Type II.

Ordering

Estimate in square feet the area to be covered. Divide total area in square feet by 100 to determine the number of squares required. For No. 15 Grade divide the number of squares by four to determine the number of rolls to be ordered. For No. 30 Grade divide the number of squares by two to

determine the number of rolls to be ordered. Order by rolls, not by squares, square feet or lineal feet. Order from Johns-Manville local representative, or order direct from Johns-Manville District office in which territory you are located. (See map on page 2).



J-M INSULATING BOARD PRODUCTS

Millions of square feet of Johns-Manville Insulating Board products are in use today in Army, Navy, Marine and Maritime Commission structures, including barracks, hospitals, chapels, theatres, airplane hangars and factories, ammunition dumps and depots, recreation buildings, and officers' quarters. These materials are also used in constructing temporary, demountable and stationary houses in the United States and foreign lands.

In new construction Insulating Board can be used as exterior and interior wall finishes and as sub-floor and ceiling coverings, thus conserving critical lumber.

Insulating Board products also play an important part in the remodeling of dwellings, warehouses, office buildings, commercial shops, etc., which the

Army or Navy may have acquired, and for maintenance of existing structures.

All Johns-Manville Insulating Board products are made from a basic raw material of tough, clean wood fibers. The manufacturing process interlocks the fibers so that the sheets have no definite grain and therefore are easily cut or sawed and will nail without hazard of splitting. Bevels, grooves or shiplapping may be easily made with cutting tools which are available throughout the country.

Three divisions of Insulating Board products developed by Johns-Manville, are especially adapted to Army and Navy needs. Each of them serves a definite functional purpose. These are **J-M Weathertite Sheathing**, **J-M Building Board** and **J-M Panels and Planks**.

J-M WEATHERTITE SHEATHING

Description

This product is used for the sheathing of framed structures over which exterior sidings of brick, stucco, wood or asbestos siding shingles may be applied. On temporary structures the exterior siding may be omitted. In this case the exposed surface should be painted.

The use of these large sheets, by reducing to a minimum the number of joints, braces and strengthens the walls, reduces the infiltration of moisture and wind and insulates against heat and cold. All surfaces and edges of sheets are surfaced with an asphalt impregnation.

Sheets are $2\frac{5}{32}$ " in thickness and homogeneous throughout; available in two widths for vertical and horizontal application.

Vertical Application

4' wide x 8', 8'6", 9', 9'6", 10' & 12' long.

Horizontal Application

2' wide x 8' long.

The 4' width sheets are square edged. The 2' x 8' sheets have a V groove joint on the long edges, the short edges are square.

Application is easy and fast. The 4' widths applied vertically form a solid unbroken sheet reaching from plate to plate and bridging across



Weathertite Sheathing applied to framing.

three standard 16" stud spaces. All joints come over framing members with no openings to permit the penetration of air, dirt or moisture; consequently it is not necessary to apply a felt or building paper over the sheathing board. The 2' x 8' sheets applied horizontally bridge across six standard 16" stud spaces with the vertical joints coming over the studs and staggered to increase the bracing strength. The groove should always be placed down so that moisture will not penetrate the sheathing through the joints. In addition to being a struc-

tural building material, Johns-Manville Weathertite Sheathing has a remarkable degree of insulating efficiency.

One thickness is equivalent in insulating value to:

- 2 thicknesses of wood sheathing (dressed)
- 6 thicknesses of 1/2" gypsum board
- 10" typical hollow clay tile
- 11" of common brick
- 20" of pressed face brick
- 26" of concrete

Application

Apply 2' wide units with V-groove downward (Fig. 1.) at right angles to framing members which shall be accurately spaced on 16" centers. Bring horizontal joints into firm contact and space end joints not less than 1/8" apart. Center end joints

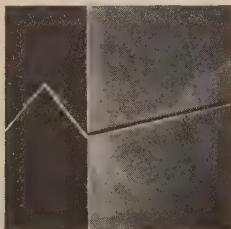


FIG. 1

over the framing members, staggering successive courses. Apply 4' wide units with long dimension parallel to framing members which shall be accurately spaced on 16" centers. Space panels at least 1/8" apart at joints and provide proper size headers to center behind all end joints.

over the framing members, staggering successive courses.

Apply 4' wide units with long dimension parallel to framing members which shall be accurately spaced on 16" centers. Space panels at least 1/8"

Nail 25/32" units with 8d common nails. First nail at intermediate framing member spacing nails 6" on center and along edges 3" apart, 3/8" from edge of board.

Wood siding can be applied directly over the sheathing by using nails long enough to penetrate studs 1".

J-M Asbestos Siding Shingles can be applied over sheathing by first nailing a 1" x 3" wood nailing strip horizontally spaced on proper centers to receive shingles or J-M Asbestos Siding Shingles can be applied direct to the sheathing and secured with barbed nails and metal clips. A copy of detailed specifications available on request, also a copy is sent to the fixed fee contractor, general contractor or construction officer in charge when the first shipment on an order leaves the factory.

Packaging

Johns-Manville Weathertite Sheathing is wrapped in convenient sized packages with tough paper.

Size	Pcs./Pkg.	Sq. Ft./Pkg.	Wt. per Pkg.
2 x 8	6	96	126
4 x 8	4	128	165
4 x 8'6"	4	136	175
4 x 9	4	144	185
4 x 9'6"	4	152	195
4 x 10	4	160	205
4 x 12	4	192	246

Federal Specification

Johns-Manville Weathertite Sheathing meets all requirements of Federal Specification LLL-F-321b, Class E, dated June 30, 1942.

Ordering

Estimate number of sheets needed after determining the most economical size sheet to use. Order by square feet or sheets figured in complete packages. Packages will not be broken. Allow for cutting wastage.

J-M BUILDING BOARD



Large sheets of Building Board go on quickly.

Description

This product is mostly used for the interior covering of walls and ceilings and requires no additional decorating. It is also used as a sub-flooring.

Its purpose is to brace and strengthen the framed structure, to provide a covering for the walls and ceilings, to provide a finished appearance and to insulate against heat and cold.

Sheets are $\frac{1}{2}$ " in thickness, homogeneous throughout and available 4' wide by 6', 7', 8', 9', 10' and 12' long. All edges are square.

A $\frac{1}{2}$ " thickness of Johns-Manville Building Board is equivalent in insulating value to:

- 4 $\frac{1}{2}$ " of Gypsum Plaster
- 3 thicknesses of $\frac{5}{16}$ " Plywood
- 5 thicknesses of $\frac{3}{8}$ " Gypsum Board
- 16 thicknesses of $\frac{1}{8}$ " Tempered Hard Board

Design and Color

Available in two surface finishes: Natural—the natural light color of the clean wood from which it is made. Exposed surface is finished and is smooth, flat and reasonably free from coarse or hairy fibers.

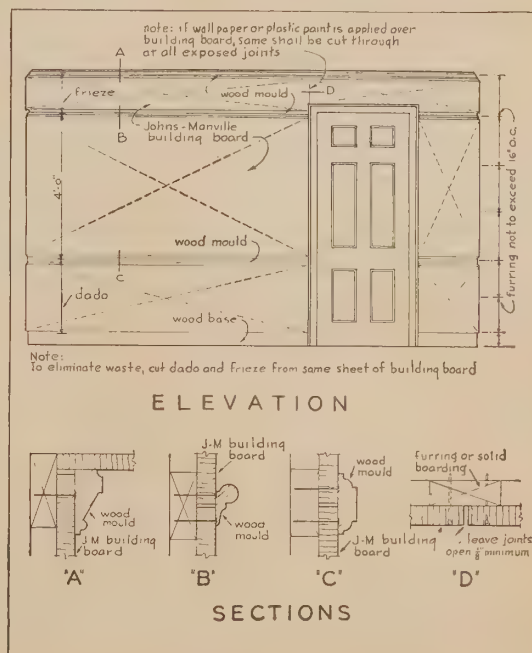
Glazecoat—this finish offers a presealed and ironed ivory pigmented coating on one surface.

If it is desired to paint either natural or glazecoat finished Building Board, see instructions on page 27.

Application

Apply Johns-Manville Building Board direct to stud framing or furring strips both of which shall be spaced accurately on 16" centers. Provide additional framing behind all joints and elsewhere to receive mouldings, etc.

Space sheets $\frac{1}{8}$ " apart at all joints. Start nailing sheets to intermediate framing members or furring strips with nails spaced not more than 6" on centers and at edges spaced 3" on centers not less than $\frac{3}{8}$ " from edge. A 4d box nail shall be used when nails are concealed or No. 17— $1\frac{1}{2}$ " - $\frac{3}{32}$ " head, special fibreboard nails when exposed. Cover all joints, preferably, with wood mouldings (see diagram opposite). A copy of detailed specifications is available on request; also a copy is sent to the fixed fee contractor, general contractor or construction officer in charge when first shipment on an order leaves the factory.



Packaging

Johns-Manville Building Board is wrapped in convenient sized packages with tough paper. All edges of packages are protected to reduce damage in transit.

Size	Pcs/Pkg.	Sq. Ft./Pkg.	Wt. per Pkg.
4 x 6	6	144	120
4 x 7	6	168	140
4 x 8	6	192	160
4 x 9	6	216	180
4 x 10	6	240	200
4 x 12	6	288	240

Federal Specification

Johns-Manville Building Board meets all requirements of Federal Specifications LLL-F-321b, Class A, dated June 30th, 1942.

Ordering

Estimate number of sheets needed after determining the most economical size sheet to use. Order by square feet or sheets figured in complete packages. Packages will not be broken. Allow for cutting wastage.



Typical military office with J-M Panels on ceiling and J-M Planks on wall area.

J-M PANELS & PLANKS

Description

Johns-Manville Panels and Planks are used for the interior covering of walls and ceilings the same as Building Board, but afford a complete deluxe finish to the surface.

Both Panels and Planks have the famous light-

ning joint, (see Figure 1) providing concealed nailing and speedy application.

The insulating value equivalents for Johns-Manville Panels and Planks are the same as those mentioned under "Building Board."

Design and Colors

Panels and Planks are furnished in $\frac{1}{2}$ " thickness. They have a glazecoat surface which is a pre-sealed and ironed pigmented coating applied to one surface. Panels are available in four colors: white, ivory, graytone and rosetan. Planks are available in three colors of ivory, graytone and

rosetan. These colors were selected because of their harmonizing color tone and high light reflection.

PERCENT OF LIGHT REFLECTIONS

White	Ivory	Graytone	Rosetan
79%	71%	53%	47%

Bevel Panel Application

First lay out area to obtain equal widths of border.

Apply 1" x 2" (preferably 1" x 3") furring-strips securely to framing members. Framing members shall be spaced not more than 16" on centers. To obtain a true and level surface furring strips shall be shimmed where necessary.

Space furring-strips accurately so as to center on the square edge of the "Lightning Joint" nailing tongue (See Fig. 1); and space 12" on centers for 12" panels and 8" on centers for 16" panels.

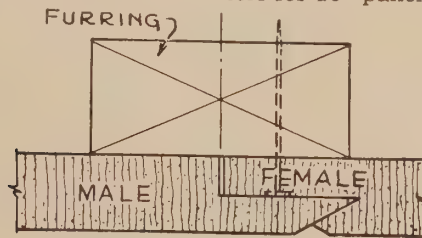
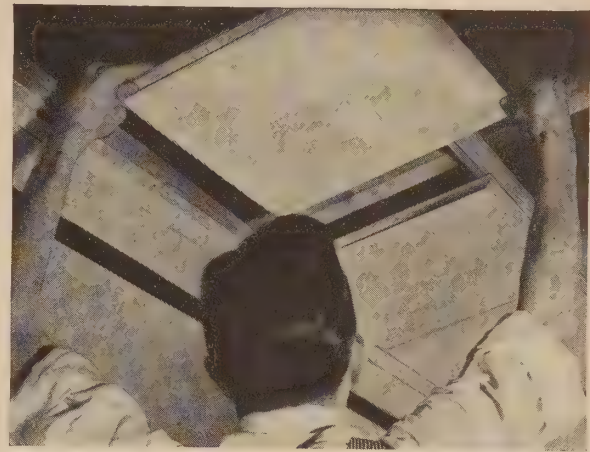


FIG. 1

Start at one corner of the area to be covered with two lengths of border strip, using Johns-Manville Bevel Plank, and place same accurately at right angles to each other with the square edge of the nailing tongue facing outward. Secure with nails driven through nailing tongue into each furring-strip and face nailing along the wall.

Place the first panel at the intersection of the border strip (See Fig. 2) sliding the male-joint of panel into the joint of the border strip with the female-joint or square edge nailing tongue facing the center of the area and nail with $1\frac{1}{8}$ "—No. 13 blued lath nails or 3d $1\frac{1}{4}$ "—No. 14 $\frac{1}{2}$ smooth box nails driven through the nailing tongue flush with the surface. Nails shall be spaced not more than 8" on centers and when 12" x 12" panels are used, nails shall be spaced on 6" centers. One nail shall also be placed at each furring-strip in nailing tongue which is at right angles to the furring-strips.

Each successive panel shall be applied in the same manner. After all panels are set, remaining border strips shall be applied and secured by face nailing close to, and along entire side of wall.



Lightning Joint permits J-M Panels to be rapidly and securely installed.

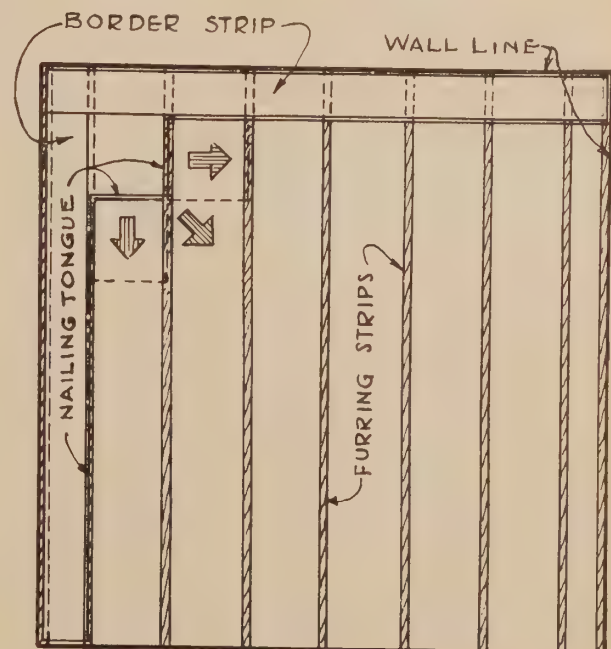


FIG. 2

Bevel Plank Application (Vertical)

Apply 1" x 2" (preferably 1" x 3") furring on 9" centers at right angles to framing which shall be spaced not more than 16" on centers, shimmed where necessary to form a true and level plane. Then fasten Johns-Manville Bevel Plank at right angles to furring strips. Additional furring shall be placed to receive borders, mouldings, etc.

Always start at one end of the area to be covered, working from left to right. The first plank shall be placed with the nailing tongue at the right. Nails shall be driven through nailing tongue and into each furring.

Slide the next plank into the groove (with the nailing flange to the right) thus concealing the nails driven in the first plank. The joints shall be formed with moderate contact only and not forced.

Care should be taken, when driving nails, to avoid hammer impressions on surface.

1 $\frac{1}{8}$ " No. 13 blued lath nails or 3d-1 $\frac{1}{4}$ " No. 14 $\frac{1}{2}$ smooth box nails shall be used at all nailing tongues and driven flush with surface. No. 17 1 $\frac{1}{2}$ "- $\frac{3}{32}$ " head, special fibreboard nail shall be used for face nailing, driven at right angles to surface and flush or use 4d-1 $\frac{1}{2}$ " No. 15 finishing nails driven at an angle with heads set slightly below the finished surface.

When planks are applied over continuous surfaces without furring-strips, space nails not more than 12" apart. Never use finishing nails in nailing



Provides a finished wall in one operation.

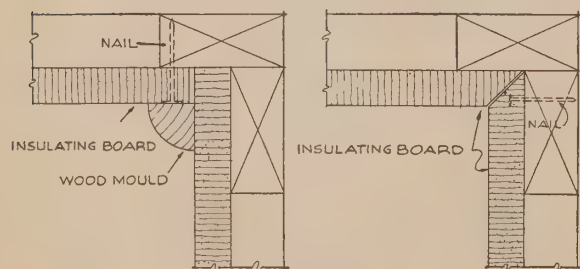
tongue. When 16" wide plank is used, face nail at center of width into each furring strip.

If end joints cannot be avoided they should be formed with chamfered bevel cut or should be lined up and covered with a batten or moulding.

When plank are applied to suspended ceiling framing, cross-bracing must be adequate in size and spacing, to prevent distortion of the framing.

Corner joints may be made by using one of the methods shown in Fig. 1 or 2.

A copy of these specifications is available on request and also is sent to the fixed fee contractor, general contractor or construction officer in charge when the first shipment on an order leaves the factory.



Corner Joint Methods.

FIG. 1

FIG. 2

Packaging

Johns-Manville Planks are wrapped in convenient sized packages with tough paper. All edges of packages are protected to reduce damage in transit.

Available sizes of $\frac{1}{2}$ " Plank are as follows:

Width	Length	Pcs. /Pkg.	Sq. Ft. /Pkg.	Wt. /Pkg.
10"	8'	12	80	72
10"	10'	12	100	89
10"	12'	12	120	106
12"	8'	12	96	84
12"	10'	12	120	105
12"	12'	12	144	126
16"	8'	12	128	110
16"	10'	12	160	137
16"	12'	12	192	164

Johns-Manville Panels are packaged in corrugated paper cartons with liner strips on the inside

of the carton to protect the edges of the Panels.

Available sizes of $\frac{1}{2}$ " Panels are as follows:

Size	Pcs. /Pkg.	Sq. Ft. /Pkg.	Wt. /Pkg.
12" x 12"	64	64	54
16" x 16"	36	64	54
16" x 32"	18	64	54

Federal Specification

Johns-Manville Panels and Planks meet all requirements of Federal Specification LLL-F-321b, Class D, dated June 30th, 1942.

Ordering

Estimate number of square feet needed. Allow for cutting wastage, (generally about 10%). Order by square feet figured in complete packages by units of width and length desired. Packages will not be broken.

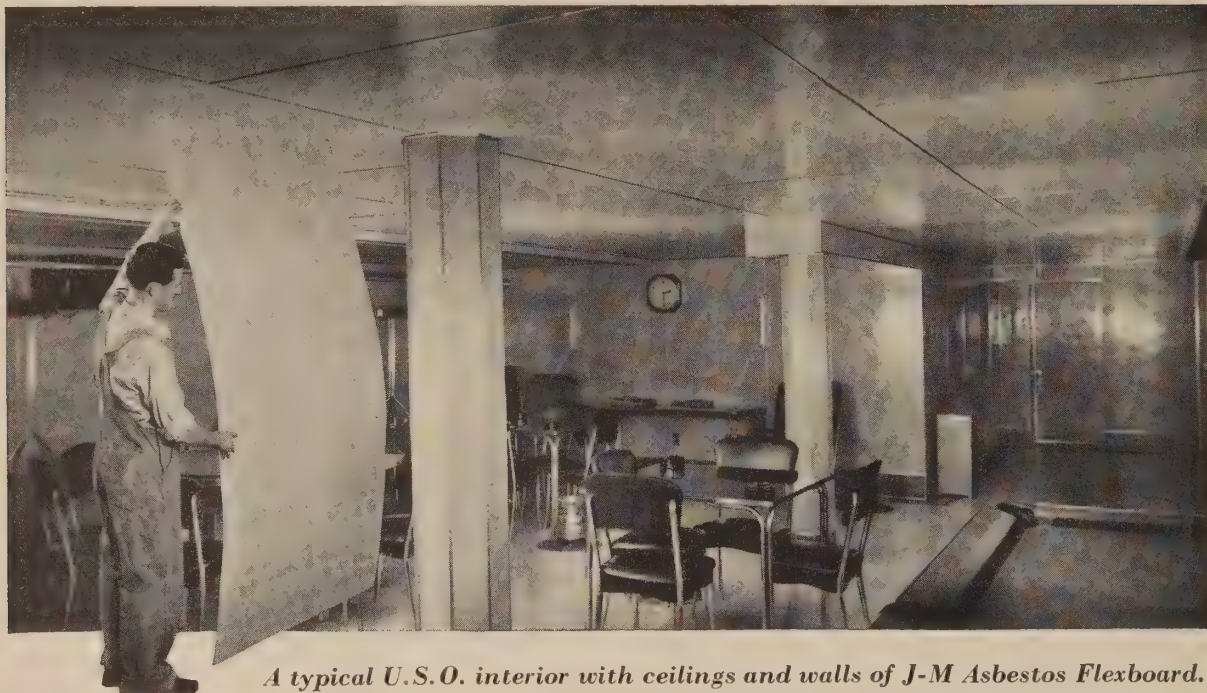
PAINTING & CLEANING OF INSULATING BOARD

Painting: Glaze Coated Board: If it is desired to redecorate, no sizing or priming of surface is required. Lead and oil paints are recommended and shall be applied in strict accordance with paint manufacturer's instructions. For types of paint other than recommended, consult paint manufacturer.

Natural Finish Board: Before applying a lead and oil paint, the surface shall first be sealed. When selecting sealer be sure it is recommended by paint manufacturer for purpose intended. A very thick glue size, approximately $1\frac{1}{2}$ lbs. of shell or chip glue per gallon of boiling water, may be used as a sealing coat. Thin glue size, varnish or shellac should not be used as a sealer. Casein cold water paints may be used without a priming undercoat. For types of paint other than mentioned, consult paint manufacturer.

Application of wallpaper or plastic paint over insulating board is not recommended where such treatment is intended to include concealment of joints between board units.

Cleaning: Dry dust and dirt may be removed from Glazecoat surfaces by rubbing lightly with a fine-textured rubber bath-sponge. Greasy marks, if not too pronounced, may be removed with neutral soap suds and water. Organic-type solvents such as high test (white) gasoline, benzol or carbon tetrachloride may also be used to remove grease spots. The solvent should be applied to the cloth, not directly to board, and the spot rubbed lightly. When an inflammable solvent is used, the usual fire prevention precautions should be taken. Natural finish boards may be cleaned by lightly rubbing with a rubber sponge or a piece of natural finish insulating board.



A typical U.S.O. interior with ceilings and walls of J-M Asbestos Flexboard.

J-M ASBESTOS FLEXBOARD

Uses

Johns-Manville Asbestos Flexboard is widely used as a low cost, fireproof interior wall lining material in Army, Navy and Marine barracks, mess halls, kitchens, garages, machine shops, furnace rooms, laboratories, wash rooms, and many other types of buildings. It is also used in making

alterations to existing structures which have been converted from civilian to military or naval service. Asbestos Flexboard is also used as an exterior wall material or as a "skirting" around buildings which have no excavation, where its fire and rot resisting qualities are of great advantage.

Description

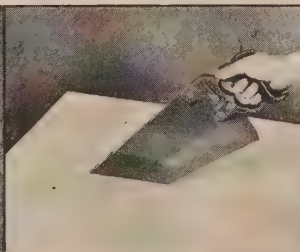
Johns-Manville Asbestos Flexboard is a structural sheet material made of asbestos and cement. It is fireproof, rotproof, and moisture-resistant. It has a hard, smooth surface that is easily cleaned. It is easy to apply with ordinary carpenter's tools. Can be cut with a saw, and nails without splitting. Large sheets cover big surfaces quickly. Being

flexible, they may be applied over curved surfaces if desired. It is economical in price and requires practically no maintenance.

Asbestos Flexboard is manufactured in three styles each fulfilling a definite functional requirement. These are J-M STANDARD, J-M DECORATIVE, and J-M DELUXE ASBESTOS FLEXBOARD.



Fire proof



Easy to saw



Easy to nail



Easy to clean

JOHNS-MANVILLE STANDARD ASBESTOS FLEXBOARD

This is a low-cost structural board furnished in natural gray color, designed for innumerable utility uses in both interior and exterior work where a decorative finished material is not called for.

Standard Flexboard is furnished in plain sheets 4' x 8', in $\frac{1}{8}$ " and $\frac{3}{16}$ " thicknesses.

In tile-scored sheets 4' x 4' x $\frac{1}{8}$ " with score marks 4" x 4".

Plain Sheets. Standard package is wrapped. When ordered crated, there will be an additional charge of \$2.50 per M sq. ft. for $\frac{1}{8}$ " thick, and \$3.00 per M sq. ft. for $\frac{3}{16}$ " thick. To assure delivery in good condition, particularly in l.c.l. shipments, we recommend material be crated.

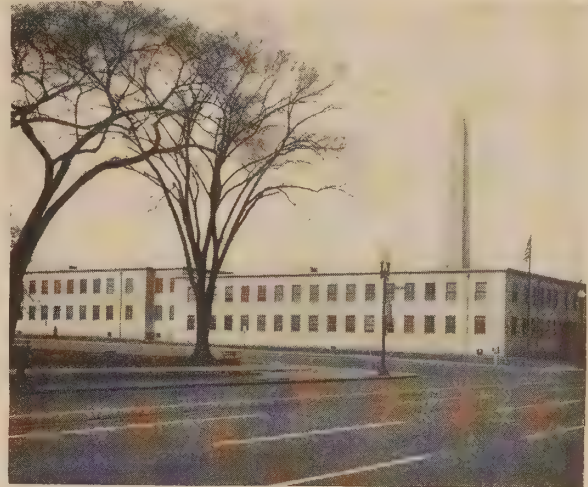
Plain Sheets

$\frac{1}{8}$ "—4 sheets per package (128 sq. ft.).....Approx.

$\frac{3}{16}$ "—3 sheets per package (96 sq. ft.).....Approx.

Scored Sheets. Standard package is crated.

$\frac{1}{8}$ " — 4' x 4' Packed 6 sheets per crate (96 sq. ft.)..... Wgt. Per Crate Approx. 125 lbs. Wgt. Per M. Sq. Ft. Approx. 1300 lbs.



Federal offices. Exterior is Standard Flexboard.

Wgt. Per Package		Wgt. Per M. Sq. Feet	
Wrapped	Crated	Wrapped	Crated
158 lbs.	171 lbs.	1235 lbs.	1335 lbs.
168 lbs.	180 lbs.	1750 lbs.	1875 lbs.

Packages will not be broken.

JOHNS-MANVILLE DECORATIVE ASBESTOS FLEXBOARD

This is basically the same asbestos cement sheet as Standard, with the addition of pigmented colors to provide an attractive decorative effect without any further treatment. Has a polished wax finish which can be maintained indefinitely by periodic waxing. Available in either unscored sheets or in tile design with 4" x 4" score marks.

Decorative Flexboard is furnished in plain sheets 4' x 8' x $\frac{1}{8}$ ". In tile-scored sheets 4' x 4' x $\frac{1}{8}$ ". Both the plain and scored sheets are available in 5 colors—gray, rose, buff, green and slate.

Standard package is crated. Packages contain one color only and will not be broken.



Decorative Flexboard--excellent in lavatories.

	Wgt. Per Crate	Wgt. Per M. Sq. Ft.
Plain Sheets—4 sheets per crate (128 sq. ft.).....	Approx. 175 lbs.	Approx. 1355 lbs.
Scored Sheets—6 sheets per crate (96 sq. ft.).....	Approx. 125 lbs.	Approx. 1300 lbs.

Decorative Asbestos Flexboard Battens

Color	Size	Battens Per Pkg.	Wgt. Per Package
Black, Buff, Green, Rose, Gray or Slate.....	$1\frac{1}{4}$ " x 4'	10	Approx. 6 lbs.
Black, Buff, Green, Rose, Gray or Slate.....	2 " x 4'	10	Approx. 10 lbs.
Black, Buff, Green, Rose, Gray or Slate.....	4 " x 4'	10	Approx. 20 lbs.

Packages of Battens contain one color only and will not be broken.

JOHNS-MANVILLE DELUXE ASBESTOS FLEXBOARD

In this product, the asbestos cement sheet has been specially treated with waterproofing and then finished with a high gloss vinyl lacquer that is baked on to the hard, waterproof surface. The result is a colorful, mirror-like wall material that is not only highly decorative, but because of the special waterproofing and the use of vinyl primers and lacquers, is suitable for use where severe moisture conditions prevail, such as shower stalls, laundries, sterilizing rooms, etc. DeLuxe Flexboard is not recommended for exterior use.

DeLuxe Flexboard is furnished in eight beautiful colors, black, white, ivory, blue, green, peach, red, and yellow. It is available in plain sheets, sheets scored horizontally on 12" centers, and sheets with 12" x 12" box-scoring.

DeLuxe Flexboard is available in plain sheets 4' x 8' x $\frac{1}{8}$ ". In horizontally scored sheets 4' x 8' x $\frac{1}{8}$ ". In 12" x 12" box-scored sheets 4' x 4' x $\frac{1}{8}$ ".

Standard package is crated. Crates contain one color and one style. Special crating, involving less-than-crate lots or assorted colors and styles in a crate, will be charged for at \$1.00 net for each such special crate.

Wgt. Per M. Sq. Ft. (Crated)

Plain Sheets (4' x 8')—4 sheets per crate (128 sq. ft.)	Approx. 1480 lbs.
Horizontally Scored Sheets (4' x 8')—4 sheets per crate (128 sq. ft.)	Approx. 1480 lbs.
12" x 12" Scored Sheets (4' x 4')—6 sheets per crate (96 sq. ft.)	Approx. 1510 lbs.

Application

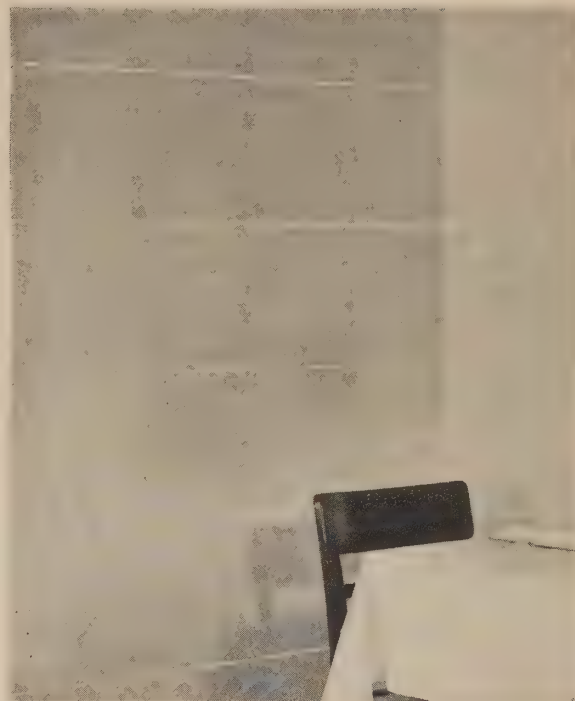
FOR INTERIOR USE

Framing, spaced not more than 16" on centers, shall be set plumb and covered with either wood sheathing or not less than $\frac{3}{8}$ " plywood sheets before installing $\frac{1}{8}$ " Standard, Decorative or DeLuxe Flexboard.

When $\frac{3}{16}$ " Flexboard is used it may be applied direct to the framing spaced not more than 16" on center without a backing.

When applying De Luxe Flexboard around bathtubs or shower stalls, apply a layer of Waterproof Asbestos Felt over the entire surface to receive the Flexboard with horizontal joints lapped 3" and vertical joints lapped 6". Set the bottom edge of Flexboard in non-staining caulking cement where it meets rim of tub or shower curb.

Sheets shall be set to a horizontal line, nailing from center of sheet toward edges, spacing nails



De Luxe Flexboard in dining room of canteen.

not over 16" centers vertically and horizontally in main body of sheet and 8" centers along edges. In scored sheets, nail in grooves and not over 6" on center along edges. Flexboard may be nailed directly without drilling.

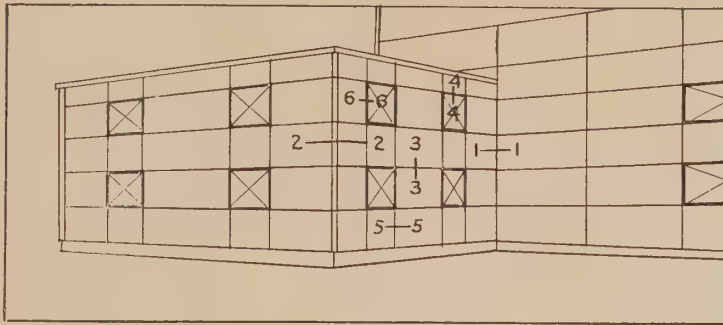
FOR EXTERIOR USE

For exterior use, $\frac{3}{16}$ " thick Flexboard shall be used with studs spaced on not more than 16" centers as shown in diagrams opposite.

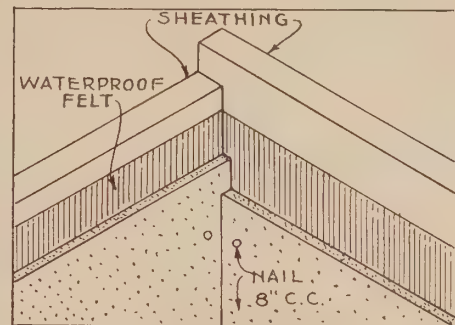
Special nails for use with $\frac{1}{8}$ " Flexboard can be ordered with shipment. Nails shall be long enough to penetrate the wood framing 1". For $\frac{3}{16}$ " material use drive-screw nails as manufactured by Hillwood Mfg. Co., Cleveland, Ohio. For driving through double thicknesses, as when battens are employed, use drive screw nails.

Complete directions for proper application of Asbestos Flexboard, are included in each package.

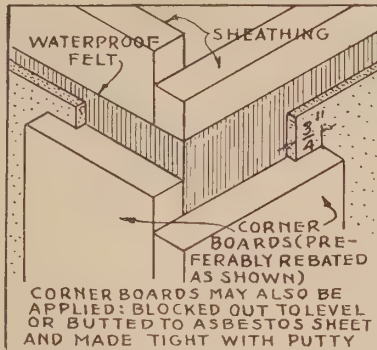
Exterior Application of Asbestos Flexboard Sheets



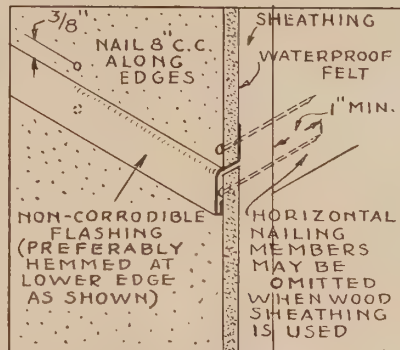
KEY ELEVATION



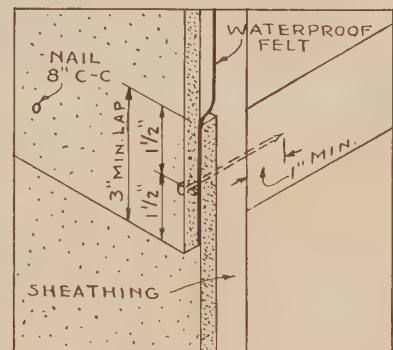
1-1 INSIDE CORNER



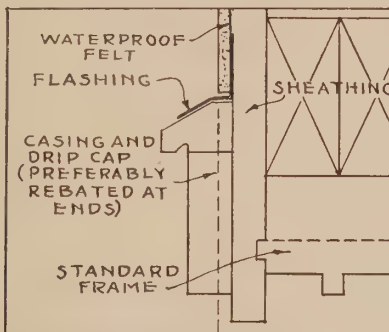
2-2 OUTSIDE CORNER



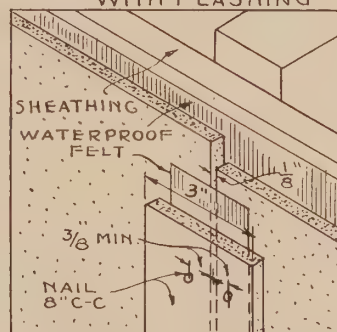
3-3 HORIZONTAL JOINT WITH FLASHING



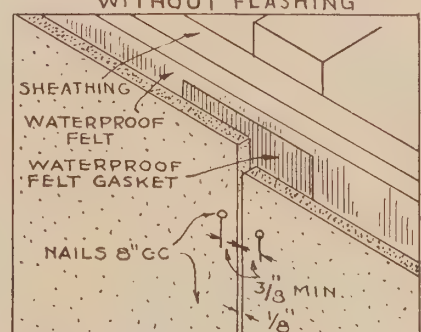
3-3 HORIZONTAL JOINT WITHOUT FLASHING



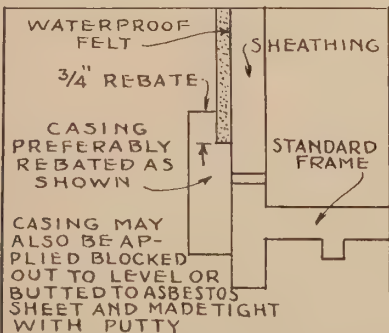
4-4 WINDOW OR DOOR HEAD



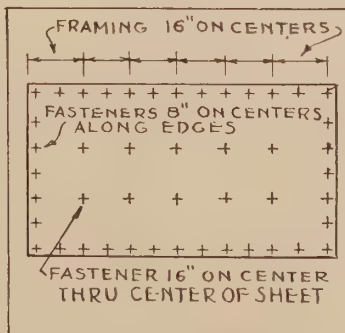
5-5 VERTICAL JOINT BATTEN



5-5 VERTICAL JOINT FLUSH



6-6 WINDOW OR DOOR JAMB



LOCATION OF FASTENERS

- ① FASTENERS SHOULD BE OF NON-CORRODIBLE METAL OF HELIX DRIVE SCREW TYPE WITH ADEQUATE HEADS (CASING HEAD NOT RECOMMENDED)
- ② AS SHOWN ON DETAIL DRAWING, SECURE SHEETS INTERMEDIATELY 16" C-C IN BOTH DIRECTIONS, PLACED TO ENTER FRAMING MEMBERS.
- ③ SHEATHING MAY BE OMITTED IF:
"A" 3/16" SHEETS ARE USED (MINIMUM)
"B" STUDS ARE SPACED AT 16" CENTERS MAX.
"C" ALL JOINTS ARE CENTERED OVER FRAMING MEMBERS
- ④ IF CAULKING PUTTY IS USED IT SHOULD PREFERABLY BE OF THE NON-STAINING TYPE
- ⑤ FASTENERS SHOULD PENETRATE FRAMING MEMBERS TO A MINIMUM DEPTH OF 1"

ACCESSORIES FOR USE WITH J-M ASBESTOS FLEXBOARD

NAILS

1" Special drive screw button head nails for use with Decorative Flexboard and 1/8" Standard Flexboard.

Packed in 5 lb. cartons of 20—1/4 lb. packages (1100 nails per lb.)

1" Special drive screw casing head nails for use with 3/16" Standard Flexboard.
Packed in 5 lb. cartons of 20—1/4 lb. packages (1100 nails per lb.)

J-M FLEXBOARD CEMENT

A special adhesive cement for use in the application of Standard, Decorative and Deluxe Flexboard. (See instructions contained in Direction Sheets.)

	Weight
5 gal. cans	60 lbs.
1 gal. cans	12 lbs.

J-M JOINT CEMENT

For use in the application of Deluxe Flexboard. Available in Gray and White, packed in cartons containing 24 two oz. cans. Two ounces are sufficient for 16 lineal feet of joint. Cartons will not be broken.

J-M TOUCH-UP LACQUER

Touch-up lacquer for use in the application of Deluxe Flexboard. Available in all eight colors, packed in 1 oz. cans, 24 cans per carton. (All one color, or assorted colors).

Federal Specification

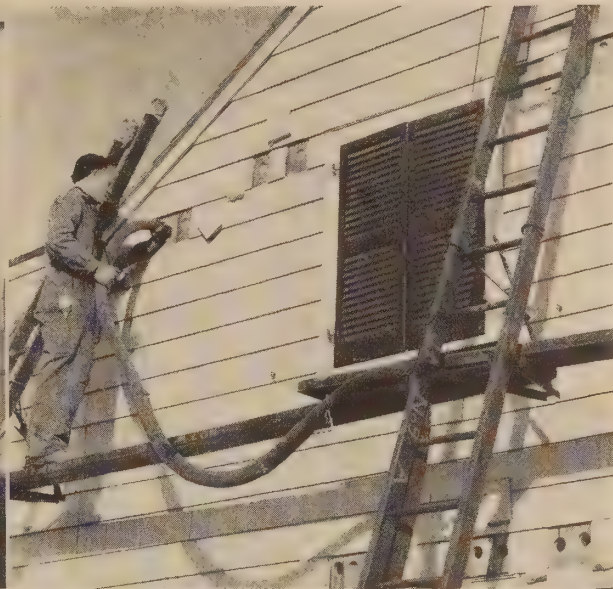
There is as yet no Federal Specification covering Asbestos Flexboard.

Ordering

Johns-Manville Asbestos Flexboard is sold in units of packages or crates, as the case may be, and is priced per M sq. ft. of material. (See Packaging Details for square footage per crate or package).

See Packaging Details for units of sale of Flexboard accessories.

Order from local Johns-Manville representative or place order through the Johns-Manville District Office in which territory you are located (see map on page 2).



J-M Rock Wool Batts fit snugly between studs. Type "A" Rock Wool is blown from the outside.

J-M ROCK WOOL INSULATION

Uses

Johns-Manville Rock Wool Insulation is being used by the Army and Navy for sidewall, ceiling and roof insulation in barracks, recreation and mess halls, hospitals, office and other buildings. Its use

allows the government to conserve large quantities of fuel. It also gives the armed forces as well as other government workers maximum comfort under all extremes of weather.

General Description

J-M Rock Wool Insulation, as its name implies, is "wool" made from rock—literally a soft wool-like material composed of fleecy mineral fibers which enclose millions of tiny air cells. Two types of J-M Rock Wool Insulation are available. **Type B**

—the Superfelt Batts and Blankets for use in new construction and in easily accessible areas of existing buildings. **Type A**—in nodulated form for pneumatic or "blown" installation in closed walls and other areas in new or existing structures.

TYPE "B" ROCK WOOL (BATTS AND BLANKETS)

Description

Super Felt Batts are fabricated to size for installation between wall, ceiling and roof framing members in conventional construction. Each batt has cemented to it, with asphalt, a vapor-barrier membrane with projecting flanges for nailing on its two sides. This serves the double purpose of providing protection against the condensation of moisture vapor and also a means of stapling or nailing the batts in position.

Super Felt Blankets consist of a core of the designated thickness of rock wool enclosed with a vapor barrier paper on one side and a moisture-permeable uncoated Kraft paper on the opposite side sealed along the long edges to form a nailing flange.

The all-mineral nature of rock wool makes it impervious to mould, rot or disintegration. It provides an effective barrier against fire.

Sizes and Thicknesses

Super Felt Rock Wool batts are furnished in both Full Thik ($3\frac{1}{2}$ "") and Semi Thik (2"). The standard sizes, designed for installation in conventional framing on 16" center are 15" x 23" and 15" x 48". The 15" x 48" size is better adapted to side wall work, as two batts will completely span the usual 8' ceiling height. The smaller 15" x 23" is more conveniently installed in overhead work between roof rafters.

Super Felt batts may also be obtained in 19" and 23" width for installation in framing that is 20" or 24" on center.

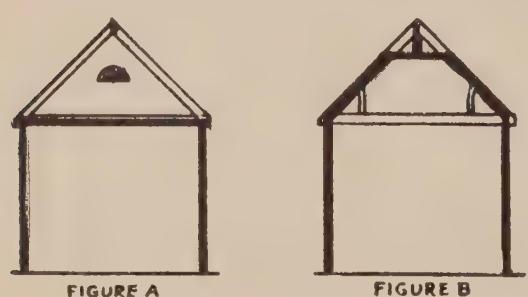
Super Felt is also furnished in blanket form in the following sizes:

Thickness	Width	Length
1"	15", 19", 23"	36'
2"	15", 19", 23"	24'
3"	15", 19", 23"	18'

Application

Complete directions for application are included in each container of material.

In a building where the open area under the rafters or attic space is not used, but is well ventilated, install batts in outside walls and between the top story ceiling joists as shown in Figure A. When attic or upper space is to be used install batts between roof rafters and on top of ceiling as indicated in Figure B.



Place batts between exterior wall studs with unpapered face toward sheathing. If Full-Thik batts are used tack projecting paper edges or flanges over the interior face of studs as shown on Figure C. When Semi-Thik batts are used secure flanges to inner sides of studs as shown in Figure D.

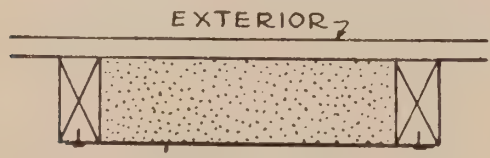


Fig. C Between 4" Studs



Fig. D Between Studs Exceeding 4" in Depth

Between roof rafters place batts with unpapered face against roof sheathing and membrane flanges secured with continuous wood lath as shown in Figure E.

When batts are placed between ceiling joists install with vapor barrier membrane surface down and resting on ceiling lath. (See Fig. F.) When applied over Insulating Board Ceiling Panels which have been installed on wood furring strips, support batts on wood laths, placed on 6" centers at right angles to furring strips.

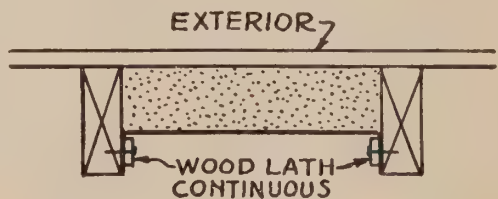


Fig. E Between Rafters Exceeding 4" in Depth

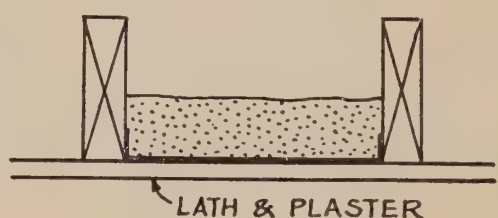


Fig. F Between Ceiling Joists

Place batts between floor joists over unexcavated or partially excavated air spaces as follows:

If earth is reasonably dry and space well ventilated, place batts with unpapered face against underside of flooring and turn membrane flanges down and secure to sides of joists as shown in Figure E. Where extremely damp conditions exist, the underside of the Rock Wool installation should be protected from moisture penetrating the batts. In such cases consult the nearest J-M office (see map on page 2).

Packaging

Packaged in strong containers. Net square feet per size, per container as follows:

Full Thik Batts	Semi Thik Batts	3" Blankets (Thik)	19" x 24' (76 sq. ft.)
15" x 23" (38.33 sq. ft.)	15" x 23" (57.5 sq. ft.)	15" x 18' (45 sq. ft.)	23" x 24' (92 sq. ft.)
15" x 48" (40 sq. ft.)	15" x 48" (60 sq. ft.)	19" x 18' (57 sq. ft.)	
19" x 23" (48.55 sq. ft.)	19" x 23" (72.83 sq. ft.)	23" x 18' (69 sq. ft.)	1" Blanket
19" x 48" (50.67 sq. ft.)	19" x 48" (76 sq. ft.)		15" x 36' (90 sq. ft.)
23" x 23" (58.78 sq. ft.)	23" x 23" (88.17 sq. ft.)	2" Blanket (Med.)	19" x 36' (114 sq. ft.)
23" x 48" (61.33 sq. ft.)	23" x 48" (92 sq. ft.)	15" x 24' (60 sq. ft.)	23" x 36' (138 sq. ft.)

Federal Specification

Both Super Felt Batts and Blankets comply with Federal Specification HH-I-521B, Type I, Class A, dated August 27th, 1937 and including Amendment No. 2 dated December 24th, 1941.

Ordering

Estimate in square feet net area to be insulated. Order in container lots from local J-M representative or through the J-M District Office in which territory you are located (see map on page 2).

TYPE "A" ROCK WOOL (PNEUMATICALLY BLOWN)

Description

J-M Type A Rock Wool Insulation is recommended for insulating existing structures. It is a nodulated form of rock wool, which, when blown into the walls and overhead spaces with compressed air, fills every space with heat resistant material.

Type A Rock Wool Insulation is blown at low pressures, usually 2 lb. per sq. in. or less. The pressure accomplishes two desired effects: It gives a firm, even pack which assures maximum thermal efficiency; and it puts the material under an initial compression so that any subsequent vibration or building movement will not cause the insulation to settle, but rather, to expand and thus retain its full insulating value. The insulation work, for the most part, is done from the outside with a minimum of dust or disturbance inside the structure.

Application

Proper application is just as important in insulating existing structures as is the material itself. For this reason, Johns-Manville has established, in convenient centers throughout the country, Approved Rock Wool Insulation Contractors who have the proper equipment and who can qualify in experience and business integrity to carry the J-M franchise.

Consult local Johns-Manville representative or nearest Johns-Manville District Office for complete details and also for the name of the nearest Approved Contractor (see map on page 2).



Insulating a closed and inaccessible roof area.

Federal Specification

J-M Rock Wool Type A meets requirements of Federal Specifications HH-I-521 B Type 2 dated August 27, 1937, and amendments No. 1 and 2 dated June 8, 1938 and Dec. 24, 1941 respectively.



The floors of this corps headquarters are tough, durable and resilient J-M Asphalt Tile.

J-M ASPHALT TILE FLOORING

Uses

Johns-Manville Asphalt Tile Flooring is widely used in Army, Navy and Marine barracks, hospitals, depots, post exchanges, and administrative buildings of various types. This product has also

been installed in many alterations to existing structures which have been converted to U. S. O. Centers, Coast Guard headquarters and other types of service buildings.

General Description

Johns-Manville Asphalt Tile is not, as the name implies, made principally of asphalt. It is composed largely of specially graded asbestos fibers, inert mineral fillers and pigments which are cemented or bound together by special asphalt or resins of unusual toughness and resistance to moisture. This results in a low cost resilient floor covering of marked durability, high resistance to moisture, quietness, sanitation and safety under foot. With its high resistance to moisture, asphalt tile flooring is the only resilient floor covering on the market which can be safely recommended on grade or

below grade locations.

Because J-M Asphalt Tile is non-absorbent and will not originate dust, it requires minimum attention or maintenance beyond ordinary cleaning. The prewaxing which the asphalt tile receives at the factory increases the ease with which the floor can be kept clean. When exceptional abuse or severe accident makes repair necessary, new units can easily be inserted to replace the damaged ones. Furthermore, should partition changes call for an extension of the pattern this can be readily accomplished with minimum labor expense.

Styles and Colors

J-M Asphalt Tile is available in a wide range of plain and marbled colors, and in sizes and thick-

nesses to meet a considerable variety of service or installation requirements. The marble grain is not



a surface treatment which could wear off but is integral in the structure of each unit. The J-M method of manufacture precludes identical mottling even in units of the same colors and therefore the finished floor shows a freedom from repetition ordinarily lacking in marbleized designs.

Because of the wide variance in the cost of raw materials entering into the manufacture of the different colors, prices of the tile vary with the color and style of the finished product. Therefore,

colors are arranged in groups graduated from the lowest priced, Group Ax colors, up to the highest priced, Group D colors.

Group Ax plain and Group Bx marbleized colors, in addition to being the most economical, are unusually tough and durable because they contain a heavier aggregate and more asphalt than the other groups. Groups Ax and Bx colors are therefore first choice for areas where the flooring must stand exceptionally heavy foot traffic.

Application

J-M Asphalt Tile Flooring is applied only by approved flooring contractors thoroughly experienced in this work. It is installed over any smooth, firm sub-floor strictly in accordance with the manufacturer's directions. The thin film of a special asphalt adhesive is spread evenly over the sub-floor and units are applied individually after adhesive has dried.

New concrete sub-floors shall be firm and solid and shall have a top finish at least $\frac{3}{4}$ " to 1" thick composed of one part Portland Cement and two parts screened, clean sand to prevent cracking. This topping shall be brought to a smooth steel-trowelled finish free from lines or joints.

Old concrete sub-floors shall be free from old floor coverings or other surface treatments. Expansion joints, cracks, score marks and depressions shall be filled in, as recommended by the manufacturer, in order to produce a smooth even surface.

Rough or uneven sub-floors must be conditioned

with a levelling course or underlayment installed in accordance with the manufacturer's directions before asphalt tile is applied.

Wood sub-floor shall be of double construction over joists not to exceed 16" centers and which are of sufficient structural strength to carry intended loads without deflecting. The surface flooring shall be of well seasoned, kiln dried, T & G flooring, not over 3" face width, top-nailed and toe-nailed. All wood floors shall be sanded to a uniform surface and shall contain no cupped or springy boards. Asphalt Tile is not recommended over wood sub-floors that are on grade or above the ground without heat or ventilation under the floor since such wood floors are subject to conditions which may cause buckling or rotting of the wood.

In general, the temperature of all areas to receive asphalt tile flooring must be maintained at 70° F. or higher for several days before, during and after application of the material.



J-M Asphalt Tile is laid by skilled mechanics.

Federal Specification

J-M Asphalt Tile Flooring conforms to all requirements of Federal Specification SS-T-306 dated May 1, 1934 which is generally considered the yardstick of asphalt tile quality.

Ordering

Since this commodity is sold only through approved flooring contractors on an applied basis, orders should be placed with the local Johns-Manville approved contractor. Consult local Johns-Manville representative or Johns-Manville District Office for the name of the nearest approved applicator (see map on page 2).



Rebuilding road in Army camp to withstand military traffic. Expansion joint in foreground.

J-M EXPANSION JOINTS FOR CONCRETE

Uses

Johns-Manville Self-Expanding and Standard Cork Expansion Joint and Felt Sided Asphalt

Expansion Joint are used in concrete runways of Army and Navy Airports and Military Highways.

General Description

Cork is compressible, resilient and moisture resistant. It is unusually tough and durable, yet light in weight. Since it is cellular rather than fibrous in structure, it will not absorb liquids to any extent. For these reasons it is ideally adapted to the strict requirements of an expansion joint material which can function efficiently under the severest service and climate. In addition, unlike many expansion joint materials, cork will not extrude under compression and also does not break down in contact with petroleum products.

Self-Expanding Cork Expansion Joint is made from natural cork particles and a synthetic resin. These materials are formed into sheets which are then dehydrated and compressed to about 60% of

their original thickness by means of a special manufacturing process. Cut into desired lengths and wrapped into waterproof packages immediately upon manufacture, Self-Expanding Cork remains in its compressed form until the covering has been removed and the material installed in the joint. Not until this point, as the exposed cork begins to re-absorb moisture from its surroundings, does self-expansion begin.

The expansion and compression limits of Self-Expanding Cork are well established, affording the engineer a hitherto unavailable flexibility of joint design. Therefore, a carefully designed construction calling for the inclusion of Self-Expanding Cork Expansion Joint assures a sufficient margin of safety

to cover both expansion and contraction of the concrete.

Self-Expanding Cork Expansion Joint is available in lengths up to 12', in widths up to 36" and in thicknesses of $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", and 1". The weight of Self-Expanding Cork per board foot is approximately 2.6 lbs. Shipment is always made in waterproof packages, packed in crates. Prior to installation Self-Expanding Cork should be stored with reasonable care to protect the packaging from mechanical damage and from exposure to water or damp conditions.

Standard Cork Expansion Joint, because it offers all the advantages of Self-Expanding Cork, except self-expansion, has proved highly satisfactory in

many installations where self-expansion of the joint filler is not necessary. As a matter of fact, Standard Cork is identical to Self-Expanding Cork as soon as the latter has reached its limit of expansion.

Standard Cork, net weight 1.5 lbs. per board foot, is furnished in sizes up to 40" wide and 12' long, in thicknesses of $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", and 1".

Johns-Manville also furnishes Felt Sided Asphalt Expansion Joint composed of a bituminous core, principally asphalt, confined between two sheets of felt. It is supplied in slab form or cut to size and in thicknesses of $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", and 1". Net weight of this material is 5.7 lbs. per board foot, standard dimensions 10' long in 36" and 40" widths.

Application

Johns-Manville Expansion Joint materials are installed in concrete runways or highways, in accordance with conventional methods for the installation of various types of expansion joints. In general, these materials require a supporting device such as a bulkhead or, in some instances, a metal channel cap which functions not only as a bulkhead, but also forms a protection for the joint material while exposed during construction.

Depending upon dowel construction, there are various special devices for installing expansion joint and holding the dowels. Bulkheads and installation devices are removed after the concrete has been placed and before it has attained its initial set. The exposed edges of the concrete along the joint material are then finished, or "edged", to prevent spalling and to add to the appearance of the completed joints.

Federal Specifications

Johns-Manville S. E. Cork Expansion Joint conforms to the requirements of Type II contained in Federal Specifications HH-F-341 dated Feb. 26, 1940.

Johns-Manville Standard Cork Expansion Joint conforms to requirements of Type I contained in Federal Specification HH-F-341 dated Feb. 26, 1940.

Ordering

Lineal feet of expansion joint material as required are ordered from the Johns-Manville local repre-

sentative or through the J-M District Office in which territory you are located (see map, on page 2).

J-M READY-TO-LAY ASBESTOS ROOFINGS

Uses

Johns-Manville Ready-To-Lay Asbestos roofings are particularly adapted to pitched roofs having a minimum pitch of 3" to the foot and where a less expensive roof than a J-M Built Up Asbestos roof is desired. This material can be used for roofing new buildings as well as re-roofing old buildings.

General Description

These roofings are made of asbestos fibers and asphalt. Since Asbestos is a mineral it is rot proof and fireproof. The different types are:

Smooth-surfaced Flexstone—consists of 3 or 4 plies of asphalt impregnated asbestos felt plied together at the factory. Furnished in sheets 32" x 80", six sheets per sq.

Slate-surfaced Flexstone Roofing—consists of a heavy asphalt impregnated asbestos felt, surfaced on one side with mineral granules. Furnished in 1 sq. rolls. Meets all requirements of Federal Specification SS-R-511 dated Aug. 1, 1933.



Asbestos Roofing will not burn or rot.

White Top Roofing—consists of plies of asphalt impregnated asbestos felts cemented together at the factory and finished with a white unimpregnated asbestos felt on top. Furnished in roll and sheet form.

Application

J-M Ready-To-Lay Asbestos Roofings are usually applied directly over wood sheathing which should be well seasoned tongue and groove boards securely nailed to the roof rafters.

Roofing should be laid so that water runs over the laps, never against exposed edges. Horizontal laps should be sealed with lap cement and nailed about $\frac{3}{4}$ " from edge. Follow manufacturer's speci-

fications which are packed with product for spacing and nailing.

Vertical ends are butted, and under all vertical butted end joints, 6 wide strips of roofing felt (included with shipments) are applied centered under the joint. These strips are coated with Sealap Lap cement, into which the ends of the roofing felts are firmly embedded and nailed.

Federal Specification

J-M Slate-surfaced Flexstone meets requirements of Federal Specifications SS-R-511, dated Aug. 1, 1933.

There is no Federal Specification on Johns-Manville Smooth-surfaced Flexstone or White Top Roofing.

Ordering

Sometimes applied by Approved Roofers but can be purchased from local J-M Building Materials Dealer for application with own forces.

Consult local Johns-Manville Representative or nearest Johns-Manville District Office for additional information (see map on page 2).



This Asbestos Built-Up roof near Navy base will resist storms, heat, and wind for decades.

J-M BUILT-UP ASBESTOS ROOFING

Uses

Johns-Manville Built-Up* Asbestos Roofing is used on numerous Army and Navy buildings of all types where the pitch of the roof varies from $\frac{1}{2}$ inch up to 6 inches to the foot.

It is used both for the roofing of new construction and for re-roofing older buildings which may have

been acquired by the armed forces.

Also it may be used to provide new and more permanent roofs on military and naval structures which in the early speed of the war effort were originally covered with roofings of a temporary nature.

Description

While Johns-Manville furnishes Built-Up Roofs of every type, the smooth surfaced J-M Asbestos Built-Up Roof provides the most satisfactory and longest lived roofing service. This roof is the result of many years of study and experience in producing durable, fireproof, weatherproof, light-weight roofs at a moderate cost. It consists of built-up, alternating layers of asphalt-saturated asbestos felt and specially prepared roofing asphalt. Asbestos felt is made of asbestos fibers and asphalt. Since asbestos is a mineral it is rot proof and fire proof.

The numerous advantages of J-M Built-Up Asbestos Roof include high resistance to fire. Its use greatly decreases the hazard of roof communi-

cated fires. In army and navy locations where fire might be a dangerous menace this advantage is most valuable. Also the asbestos felt provides resistance to heat of the sun, and protection against decay. Owing to the elimination of slag or gravel topping, damaged spots are easily located, repairs quick and inexpensive. Smooth surface permits quick and thorough roof drainage. The excessive weight of slag or gravel is eliminated.

Where the pitch of the roof is less than $\frac{1}{2}$ " to the foot Johns-Manville has a complete line of tar-saturated asbestos or rag felts to be used in tar and gravel specifications. In such cases consult the nearest J-M Office (see map on page 2).

Application

J-M Built Up Roofing is the application of multiple plies of felt using either asphalt or coal tar pitch for the cementing agent. The number of plies required and their application depends upon the type of roof deck and other existing conditions. They should be applied in strict accordance with the manufacturers specification. Diagrams A and B show typical installation of the J-M Built Up Asbestos Roof.

Federal Specifications

There is as yet no Federal Specification covering J-M Asbestos Built Up Roofs, but a Federal Specification is in process of preparation.

Ordering

Built Up Roofing is usually applied by an Approved Roofing Contractor. Consult the local J-M Representative or nearest J-M District Office for a complete list of specifications and the name of the nearest Approved Roofer.

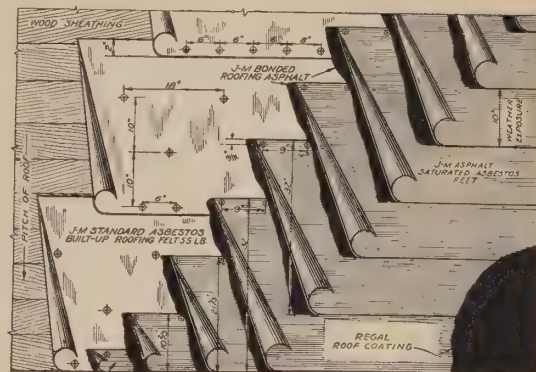


FIG. A (over wood deck)

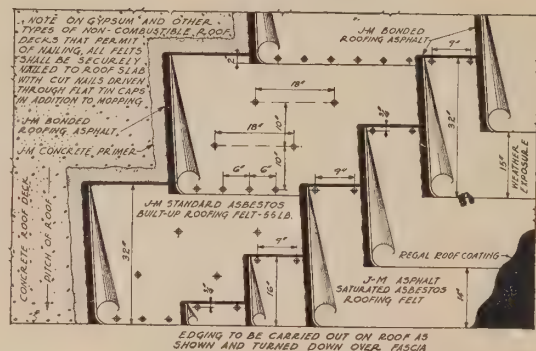


FIG. B (over concrete deck)

J-M SYSTEM OF FLASHING

Description

J-M System of Flashing is used in conjunction with J-M Built Up Roofs on parapet walls, skylight curbs or walls of adjacent buildings. J-M flashings are made up of a combination of asbestos felts and asbestile. The felts are made from asbestos fibers and asphalt and the asbestile from asbestos fibers,

asphalt and other mineral ingredients which harden after application.

These flashings like J-M Asbestos Built Up Roofing, are fireproof and weatherproof and do not need periodic coatings to protect them from the drying out action of the sun.

Application (See diagram opposite)

J-M flashings may be installed to cover completely the top and inside face of parapet walls, to extend through walls, or to extend not less than 8" high on the inside face only. J-M flashings may also be used with a sheet metal cap flashing built

into the walls, or it may be used in conjunction with raggle blocks. The number of plies of felt and the method of application depends upon existing conditions and should be applied in strict accordance with J-M details and specifications.

Federal Specification

There are no Federal Specifications covering Johns-Manville System of Flashing.

Ordering

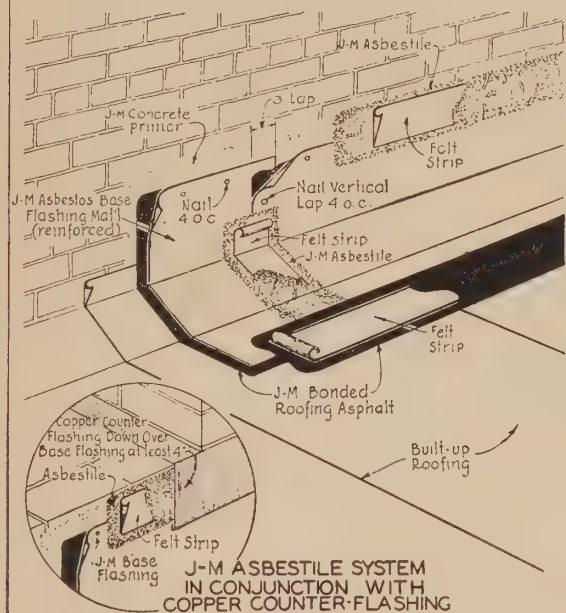
J-M System of Flashings is usually applied by Approved Roofing Contractors. Consult local Johns-Manville representative or nearest Johns-

Manville District Office for complete details and specifications and also the name of the nearest Approved Roofer. (See map on page 2).

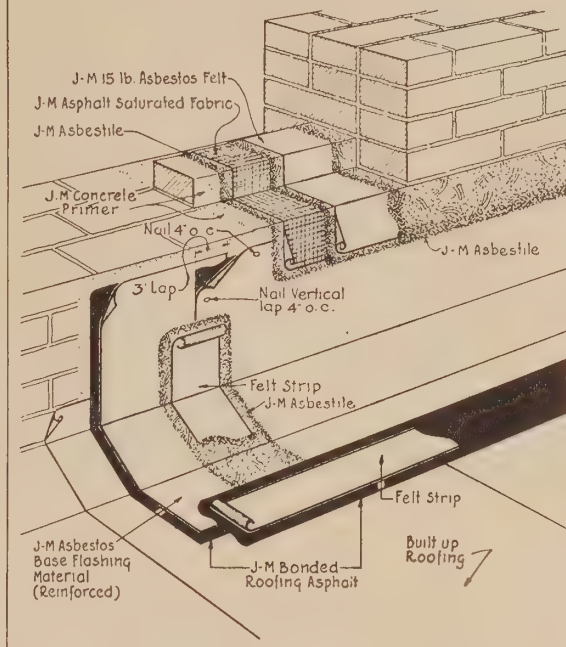


J-M BASE AND CAP FLASHINGS

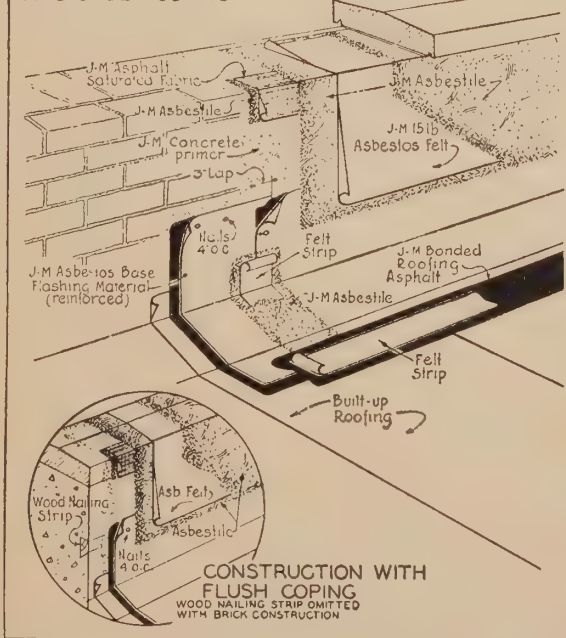
J-M STANDARD BASE AND CAP FLASHING NOT LESS THAN 8" HIGH



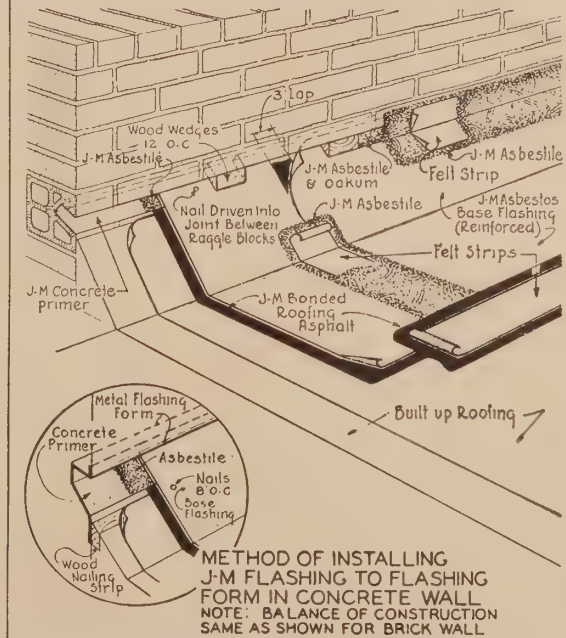
J-M BASE AND CAP FLASHING CAP FLASHING EXTENDED THRU THE WALL



J-M CAP AND BASE FLASHING FULL HEIGHT OF WALL AND UNDER COPING



METHOD OF INSTALLING J-M FLASHING TO RAGGLE BLOCK IN BRICK WALL





Old building acquired by the armed forces is being made comfortable with J-M Rigid Roofinsul.

J-M RIGID ROOFINSUL AND FELT SIDED ROCK CORK ROOF INSULATION

Uses

Johns-Manville Rigid Roofinsul and Rock Cork Roof Insulation are durable sheet materials used as insulation under Built-up Roofs.

They are used on roofs of armament mills, cold storage buildings, warehouses, administration buildings, hospitals and other military structures. Their purpose is to insulate against heat and cold, prevent condensation and roof drip, protect the

roof deck against rot and corrosion, prevent damage to roofing felts through deck movement, and permit uniform interior temperatures which are vital in many war-time processes.

They effect savings on fuel and air conditioning costs; reduce cost of heating and cooling equipment; assure more comfortable working conditions; lengthen the life of built-up roofing.

Description

J-M Rigid Roofinsul, the same material as J-M Insulating Board, is a light weight, efficient insulation made of southern pine fiber, interlaced, felted, and rolled into boards of the most practical size. At about 75° F., it has a conductivity of 0.36 B.T.U.s.

Rigid Roofinsul greatly reduces the transmission of heat through a roof.

For example, the addition of 1" Roofinsul over a $\frac{25}{32}$ " wood deck and under a smooth surfaced,

built-up roof will reduce the heat transmission 57% compared to the uninsulated roof deck.

J-M Rock Cork Roof Insulation is made of mineral wool combined with a waterproof binder, and surfaced on one side with J-M 15-lb. asphalt-saturated rag felt. J-M Rock Cork Roof Insulation is exceptionally moisture resistant, rot proof, snug fitting and unlike many insulating materials, will not swell or shrink upon contact with moisture. At a temperature of about 70° F., the conductivity of this insulation is 0.32 B.T.U.s.



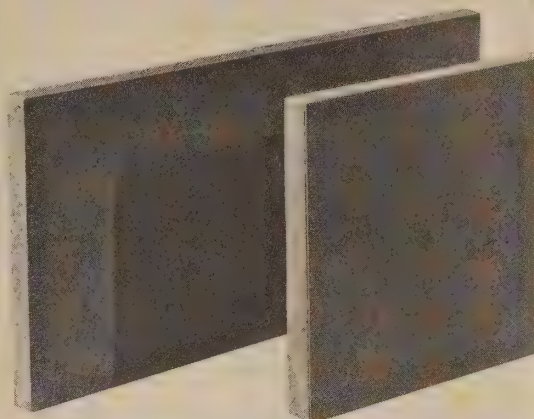
Sizes and Thickness

J-M Rigid Roofinsul is supplied $23\frac{3}{4}$ " x 48", $\frac{1}{2}$ " thick, with square edges. Thicknesses of 1", $1\frac{1}{2}$ ", and 2" are furnished of $\frac{1}{2}$ " material cemented and stapled together with a ship lap joint on all sides or with square edges. The offset of the ship lap joint is one inch for all thicknesses of one inch or greater.

J-M Rock Cork Roof Insulation is furnished 18" x 36", in thicknesses of 1", $1\frac{1}{2}$ ", 2", 3" and 4".

Application

Either J-M Rock Cork Roof Insulation or Rigid Roofinsul can be used over wood or non-combustible (except steel) decks of the usual pitches. On steel decks, Roofinsul is required because, being the more rigid of the two materials, it makes a better and firmer bridge between the ribs of the steel deck.



J-M Felt Sided Rock Cork Roof Insulation.

Packaging

J-M Roofinsul is wrapped in convenient sized packages with tough paper as follows.

Thickness	Pcs/Pkg.	Sq. Ft./Pkg.	Wt./Pkg.
$\frac{1}{2}$ "	14	110.8	86
1"	7	55.4	91
$1\frac{1}{2}$ "	5	39.6	97
2"	4	31.7	103

J-M Rock Cork Insulation is packed in cartons, the thickness of the insulation determining the number of square feet per carton. 1" thickness contains 54 sq. ft., $1\frac{1}{2}$ "—36 sq. ft., 2"—27 sq. ft., 3"—18 sq. ft., and 4"—13 $\frac{1}{2}$ sq. ft.

Rigid Roofinsul weighs about 0.77 lbs. per square foot $\frac{1}{2}$ " thickness. Rock Cork Insulation weighs about 1.6 lbs. per square foot 1" thick.

Federal Specification

J-M Rigid Roofinsul in all thicknesses meets all physical property requirements of Federal Specification LLL-F-321b, Class C, dated June 30, 1942.

There is at the present time no Federal Specification covering J-M Felt Sided Rock Cork Roof Insulation.

Ordering

Estimate the number of square feet desired and order by packages or cartons, or by square feet figured to the nearest complete package or carton. Packages and cartons cannot be broken. These roof insulations are usually applied by an Approved

Johns-Manville Roofing Contractor.

Consult the local J-M Representative or nearest J-M District Office for a complete list of specifications and the name of the nearest Approved Roofer (see map on page 2).



Airplane assembly plant. Built for permanence with walls of J-M Corrugated Asbestos Transite.

J-M CORRUGATED TRANSITE SHEETS

Uses

J-M Corrugated Transite has been widely used by the Army and Navy on ordnance plants, ammunition storage depots, and almost every type of industrial plant manufacturing materials for the war effort. It is designed for use as

roofing, siding and partitioning, particularly over skeleton frame construction. In addition to possessing structural efficiency it will withstand the many forms of destructive action which are common in chemical and metallurgical processes.

General Description

J-M Corrugated Transite is made of asbestos fiber and cement, formed under great pressure into dense, un laminated, monolithic sheets possessing unusual strength, rigidity and durability. Since asbestos is a mineral, J-M Corrugated Transite cannot burn or rot and, therefore, reduces to a minimum the hazard of conflagration through roof

or through side wall communicated fires.

This material needs no preservatives to protect it from the elements, nor any other maintenance.

It is available in two designs—corrugations 4.2" or 2 $\frac{5}{8}$ " wide. Sheets are available up to 11'0" long and have a standard overall width of 42".

Application

This material is applied over wood or steel framing provided the span between roof purlins does not exceed 4'6" and between side wall girts does not exceed 5'6". Sheets are applied with sheradized or heavily galvanized fasteners over steel and with

drive screws over wood.

By the use of these large sheets it makes for fast and economical application. As each sheet is applied and the scaffolding moves on, a large section of wall is fully completed.

Federal Specification

There is as yet no Federal Specification covering Johns-Manville Corrugated Transite Sheets but

a Federal Specification is in process of preparation at the present time.

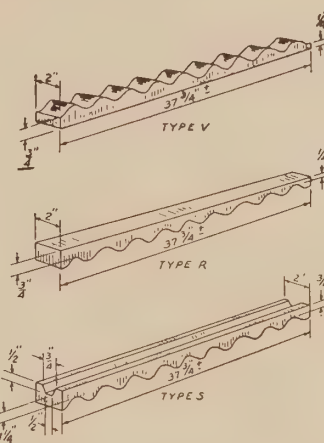
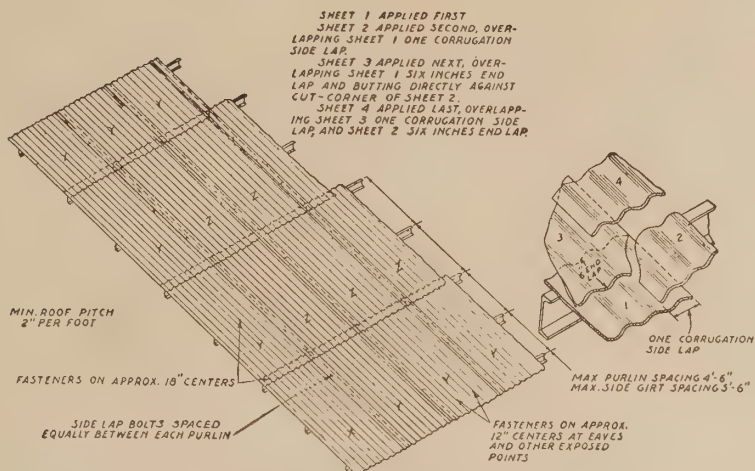
Ordering

J-M Corrugated Transite is usually applied by Approved Corrugated Erectors or General Con-

tractors. Consult the local J-M Representative or J-M District Office for additional information.

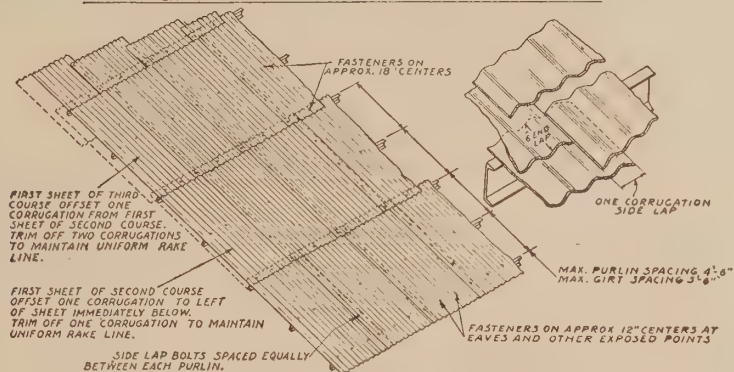


Construction details for 4.2" Corrugated Transite*

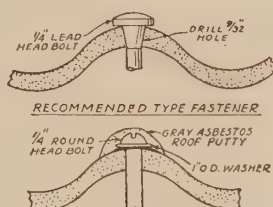
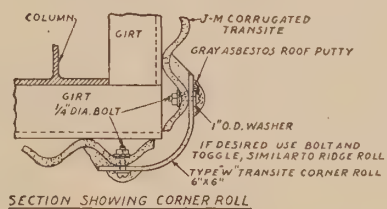


TRANSALT STRIPS

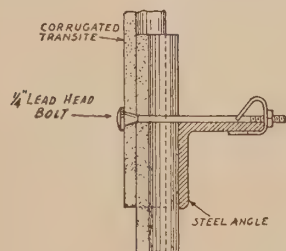
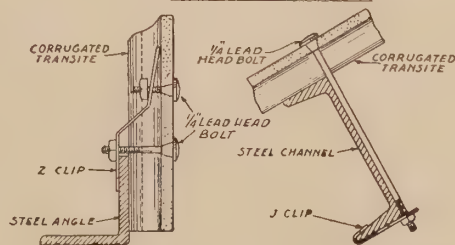
STRAIGHT LAP LINE CONSTRUCTION WITH CUT-CORNER SHEETS



STAGGERED JOINT CONSTRUCTION WITH SQUARE-CORNER SHEETS



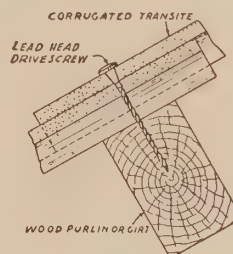
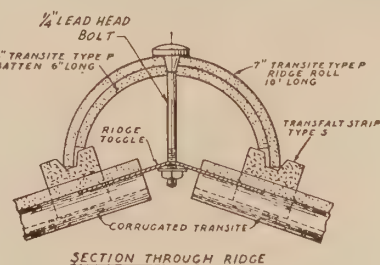
ALTERNATE TYPE FASTENER



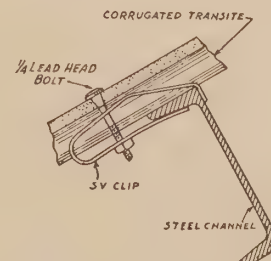
DETAIL OF HOOK CLIP

DETAIL OF Z CLIP

DETAIL OF J CLIP



DETAIL OF DRIVESCREW



DETAIL OF SV CLIP

*For 2 1/4" pitch Corrugated Transite, the side lap is two corrugations; the maximum spacing for purlins is 4 ft. and for girts, 5 ft.

Patents No. 1,489,474, 2,015,129, 2,021,929 and 2,169,376
Patented Canada 1925



Flat Transite furnishes a weather-proof, permanent, complete wall in one operation.

J-M FLAT ASBESTOS TRANSITE SHEETS

Uses

J-M Flat Asbestos Transite Sheets are used widely by Army and Navy in ordnance plants, ammunition storage, and other structures especially where a fireproof building material is essential. Where Corrugated Transite is used for the outside walls and roof this material is often

used as a lining for the inside walls and ceiling. It can also be used on outside walls.

In fact, because of its strength, resistance to both fire and corrosion, weatherproof qualities and durability, the applications of Asbestos Transite are practically unlimited.

General Description

J-M Flat Transite is made from asbestos fibers and cement which are united under tremendous pressure into dense, monolithic sheets of great strength, rigidity and durability

It is made in flat sheets, in thicknesses of $\frac{1}{4}$ " to 2", in sizes 36" x 48", 42" x 48", 42" x 96", 48" x 48", 48" x 96". $\frac{1}{8}$ " and $\frac{3}{16}$ " thicknesses also available in the smaller sized sheets.

Application

J-M Flat Transite is usually used over wood framing. Generally the studs and rafters are on 16" centers. Wide spacing is permissible but in such cases the thicker Transite sheets should be used. Consult J-M representative. In general,

construction details shown on page 31 apply. The sheets are nailed to the wood members with nails. In most cases the joints are covered with 4" battens of the same material to give the job a finished appearance.

Federal Specification

There is no Federal Specification covering Johns-Manville Flat Asbestos Transite Sheets.

Ordering

This material is usually applied by Approved Corrugated Erectors or General Contractors. Con-

sult the local J-M Representative or J-M District Office for additional information (see map on page 2).



Acoustical ceiling insures quiet, efficient offices at a U. S. Army Arsenal.

J-M ACOUSTICAL MATERIALS

NOISE QUIETING — ACOUSTICAL CORRECTION — SOUND ISOLATION

For more than 30 years, Johns-Manville has been gathering facts about sound and the most effective way to control it. In the J-M Acoustical Laboratory, one of the finest and most completely equipped of its kind, materials and methods have been developed for reducing noise and controlling sound within closely prescribed limits. Noise is recognized as a serious handicap to productive work and today acoustical material for office quieting is universally used to reduce distracting noises and afford comfortable, efficient working conditions. Noise is also a problem in hospitals, mess halls, kitchens, recreation halls and similar areas.

In addition to the problem of reducing noise there is the equally important job of controlling

sound in such types of rooms as auditoriums, theaters, band practice rooms, broadcasting studios, and lecture halls. Here it is essential that the acoustical properties of the room be free from echoes and reverberation so that the listeners are able to hear distinctly, or else the purpose for which the room was built will prove a failure.

The isolation of sound—that is, preventing it from passing into one room from another, or from the outside, is handled by means of a special J-M System, designed specifically for this problem. It is used in hospitals, broadcasting studios, band practice rooms, and similar rooms, where it is imperative that extraneous sounds be kept from interfering with their use.

Application

The application of J-M Acoustical Materials is handled by a nation-wide organization of trained acoustical engineers and construction experts. They are prepared to make analyses of acoustical conditions in all types of buildings, with specific recommendations for each particular problem. They will

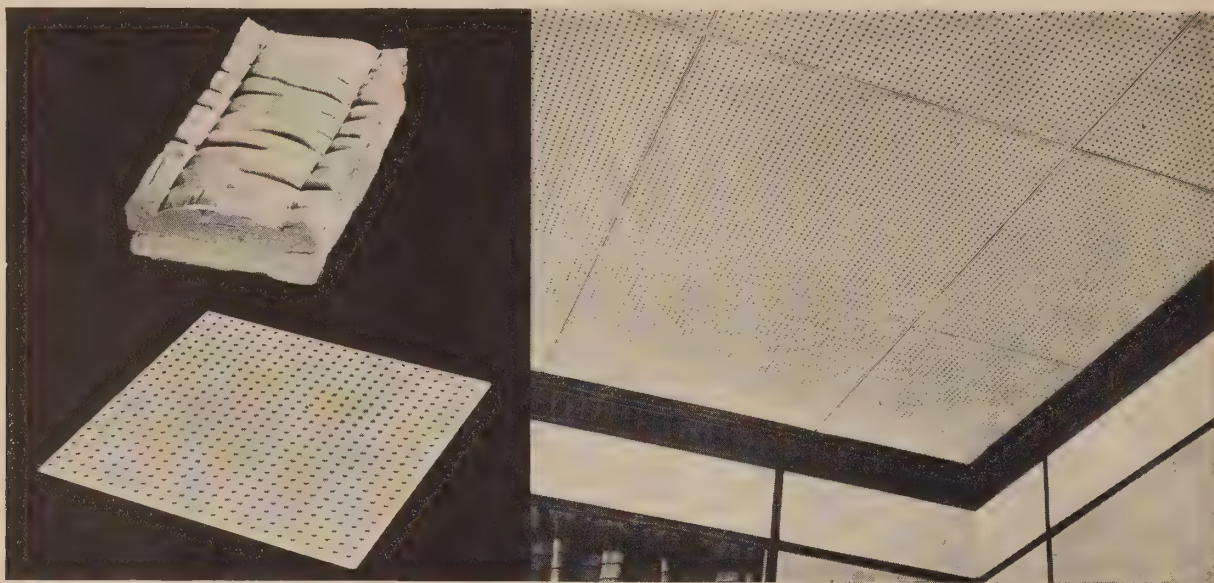
give complete estimates without cost or obligation and handle all details of application rapidly, economically and with a minimum of inconvenience.

For detailed information, consult the J-M Office nearest you or write to Johns-Manville Corporation, 22 E. 40th Street, New York City.

General Description

Johns-Manville has developed acoustical materials to handle all types of sound control problems. Specific information on three principal types of acoustical treatment which are used for the reduc-

tion of noise and for controlling sound follows. These types are J-M **Transite Acoustical Panels**, J-M **Permacoustic** and J-M **Fibracoustic**. Each offers a distinctive and pleasing appearance.



Rock Wool sound absorbing member and Transite panel combined in a noise quieting ceiling.

J-M TRANSITE ACOUSTICAL PANELS

Description

J-M Transite Acoustical Panels consist of a perforated facing of $\frac{3}{16}$ " thick Transite, (a Johns-Manville asbestos cement product) and a rock wool sound absorbing element. The latter is furnished as a separate unit and is available in a number of thicknesses and efficiencies to meet job requirements. Together, the Transite facing and the

sound-absorbing element form a basically mineral, non-combustible acoustical material which is equally adapted for wall and ceiling treatments and because of its flexibility and ready adaptability has a wide range of applications. It will afford low maintenance over a period of years with practically no attention except an occasional cleaning.

Application

In Transite Acoustical Panels, the sound absorbing element is installed between wood furring strips,

after which the Transite facing is secured to the face of the furring strips with nails or screws.

Sizes and Colors

Perforated Transite facings are available in natural gray or in standard cream and white, with beveled or square edges.

They are furnished in the following standard sizes: 12" x 12", 12" x 24", 24" x 48" in $\frac{3}{16}$ " thickness (plus absorbing element).

*Sound Absorption Coefficients

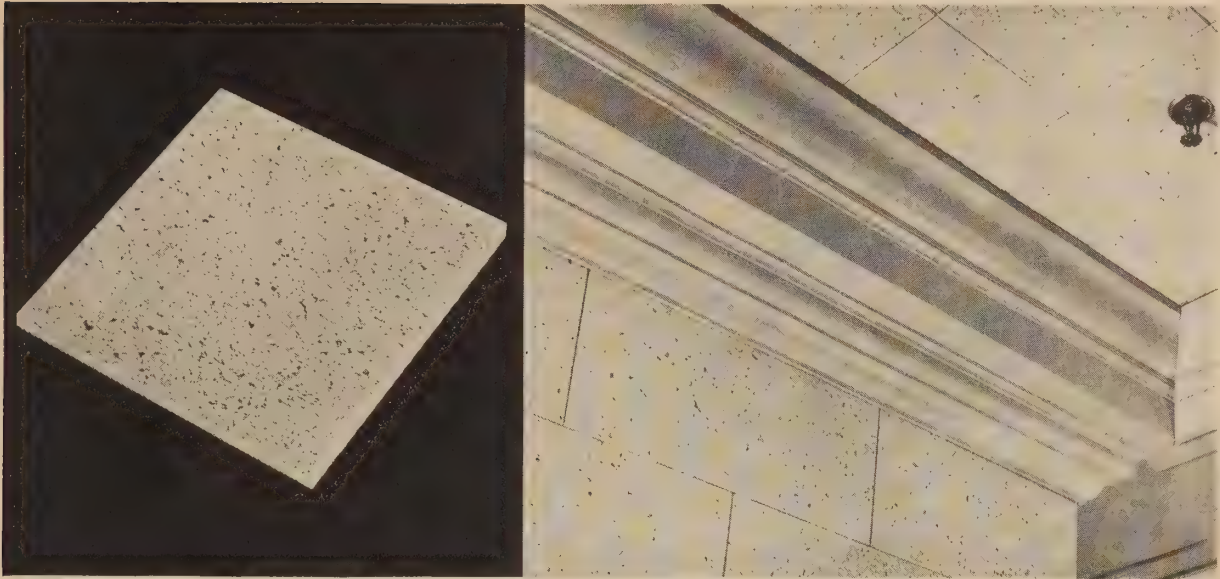
	128	256	512	1024	2048	4000	NRC
1"	.15	.30	.87	.99	.75	.40	.75
2"	.36	.92	.85	.99	.89	.50	.90

Light reflection coefficient in white finish is 72%.

*Tests by the official laboratory of the Acoustical Materials Association.

Federal Specification

J-M Transite Acoustical Panels meet Federal Specifications SS-A-118 Type IV.



A ceiling of moulded ceramic Permacoustic. Permacoustic also is installed on interior walls.

J-M PERMACOUSTIC

Description

J-M Permacoustic is a moulded ceramic acoustical material formed by baking at extremely high temperatures. It is a fire and moisture resistant product with a distinct stonelike texture well suited for all types of interiors. In addition to having excellent sound absorbing characteristics combined

with an attractive appearance, it is unaffected by moisture and will not burn and has an incombustible rating in accordance with the Federal Specification. Although Permacoustic seldom requires maintenance, it is readily cleaned by conventional methods, and when desired, may be painted.

Application

Usually the Permacoustic is cemented directly to the ceiling or wall surface with J-M Acoustical Cement.

In suspended ceiling construction, however, each unit is kerfed to accommodate the suspension system.

Sizes and Colors

Available in two natural colors: buff and white, and in two thicknesses, $\frac{3}{4}$ " and 1". Sizes are 6" x 12", 12" x 12", and 12" x 24" with square or beveled edges.

Light reflection coefficient of the natural white is 73%; painted 85%.

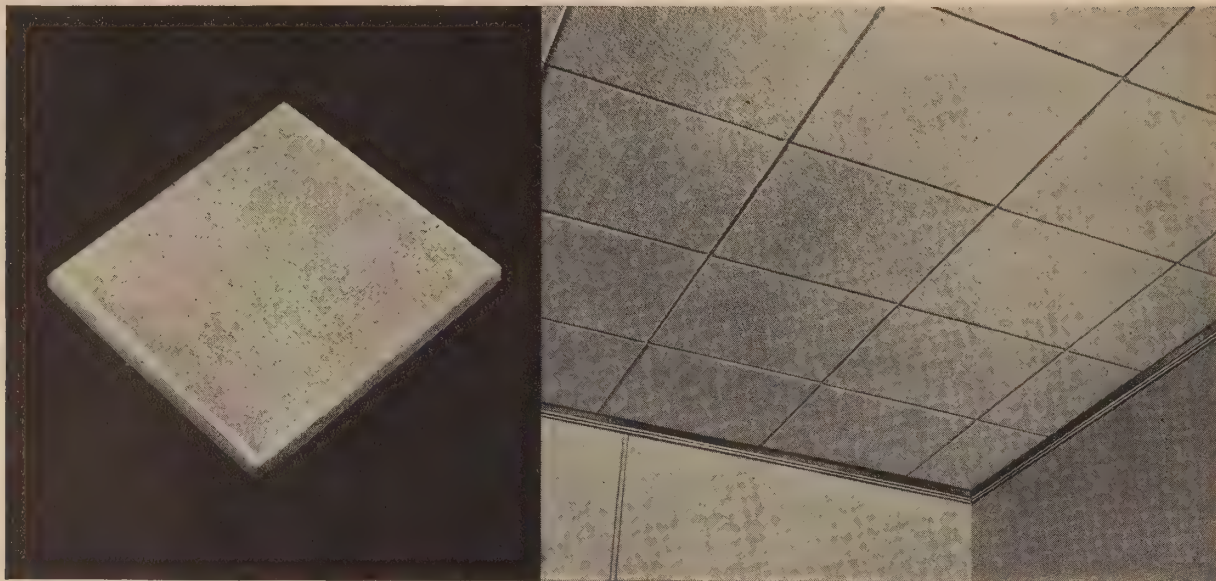
*Sound Absorption Coefficients of Permacoustic

	128	256	512	1024	2048	4096	NRC
$\frac{3}{4}$ "	.12	.35	.74	.74	.72	.75	.65
1"	.20	.62	.83	.74	.77	.80	.75

* Tests as per Letter Circular LC-714 dated Jan. 23, 1943 of National Bureau of Standards.

Federal Specification

J-M Permacoustic meets requirements of Federal Specifications SS-A-118 Type VI.



Fibracoustic panels are quickly installed, easily cleaned, and highly efficient.

J-M FIBRACOUSTIC

Description

J-M Fibracoustic is an attractive, highly efficient, low cost acoustical material which is adaptable to practically any type of interior.

It is a low density wood fibre product possessing high sound absorbing qualities and pleasing surface

texture. This material is maintained by cleaning with a brush or by wiping with a clean, damp sponge.

Where repainting is desired, water-base paints should be used.

Application

J-M Fibracoustic is applied by cementing and nailing in the conventional manner for this type of

material. This material is easily handled and lends itself to quick and economical application.

Sizes and Colors

Fibracoustic is factory painted in standard colors: white, light buff, medium buff, dark buff, French gray, and apple green.

It is furnished 1" thick, with beveled edges in the following sizes: 6" x 12", 12" x 12", 8" x 16", 16" x 16", 12" x 24", and in planks of 6", 8", and 12" widths and 48" lengths.

*Sound Absorption Coefficients of Fibracoustic

	128	256	512	1024	2048	4096	NRC
1"	.17	.45	.79	.73	.74	.73	.70

* Tests as per Letter Circular LC-714 dated Jan. 23, 1943 of National Bureau of Standards.

Federal Specification

Johns-Manville Fibracoustic meets Federal Specification SS-A-118 Type VIII.

OTHER J-M ACOUSTICAL MATERIALS

Johns-Manville Acoustical Laboratories have developed other acoustical materials which are meet-

ing specific Army and Navy needs. Chief among them are the following:

J-M AIRACOUSTIC SHEETS

J-M Airacoustic Sheets are used as a noise quieting duct lining in air conditioning and forced air ventilating systems of office buildings, barracks, hospitals, gymnasiums, auditoriums, mess halls, kitchens, theaters, lecture halls, broadcasting studios, etc.

Airacoustic Sheets are a highly efficient sound absorbing material in rigid block form, composed of rock wool and a suitable binder. They weigh only 1.6 pounds per square foot per 1 inch thickness,

are easy to handle and can be quickly and economically installed. The material is non-combustible and highly resistant to moisture.

Airacoustic Sheets are 24" x 36" and in $\frac{1}{2}$ " and 1" thicknesses. In most cases, the $\frac{1}{2}$ " thickness gives the results desired; where maximum quiet is essential, the 1" thickness is recommended.

Johns-Manville Airacoustic Sheets meet Federal Specification SS-A-118 Type VIII.

ROCK WOOL SOUND ABSORBING AND SOUND ISOLATING BLANKETS

J-M Rock Wool Blankets are used as the sound absorbing element in our Transite Acoustical Panel Acoustical treatment and also in the J-M System of Sound Isolation. It is also used for lining air ducts and housings for noisy mechanical equipment.

Rock Wool Blanket is rock wool formed into the thicknesses and sizes listed below and stitched between sheets of various materials as follows:

Type MM has flame proof muslin both sides.

Type MK has standard Kraft Paper one side and flame proof muslin the other.
Furnished 22" or 36" wide in rolls

50 ft. long in $\frac{1}{2}$ " and 1" thickness,
and 25 ft. long in 2" thickness.

Type KK has Kraft Paper both sides.

Type KA has asbestos paper one side and standard Kraft Paper the other.
Furnished $\frac{1}{2}$ ", 1" and 2" in thickness.
Rolls 36" wide in 65, 35, and 18 ft. lengths, decreasing with increase in thickness.

J-M Rock Wool Blankets meet Federal Specification 59-B-4 dated July 1, 1940.

J-M SYSTEM OF SOUND ISOLATION

This system is used to retard the transmission of sound through floors, walls and ceilings in hospitals, broadcasting studios, band practice rooms, etc. It is also used to reduce vibration set up by ventilating fans, motor generator sets and similar equipment.

The principal of the J-M System of Sound Isolation is based on the erection of a light-weight interior construction which is within, yet completely separated from the rest of the structure.

This is accomplished by means of shock-absorbing isolators. No solid through connections are used.

Because of the complex nature of most sound isolation problems, the J-M System of Sound Isolation is installed only after a thorough study and analysis of the requirements by a J-M acoustical engineer. It is suggested that the nearest J-M Office be consulted for further details and recommendations.

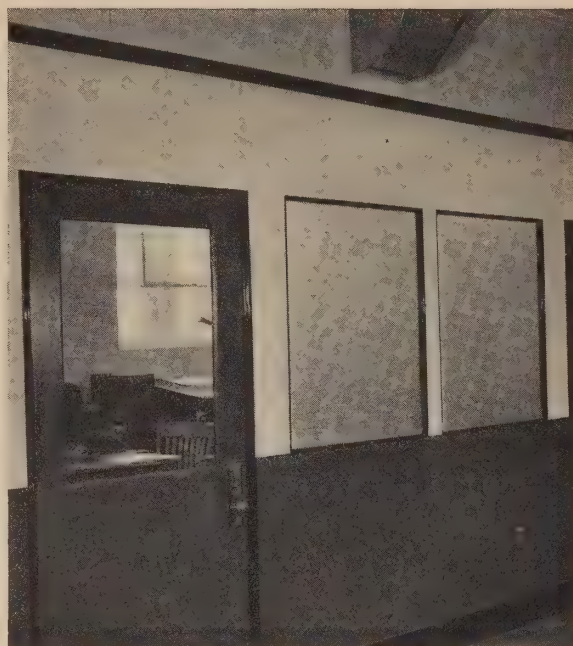
J-M TRANSITE MOVABLE WALLS

Uses

In Transite Walls, Johns-Manville offers a completely movable partition which meets the many different requirements of offices, hospitals and, in fact, most all interiors which require sub-dividing into smaller areas. Transite Movable Walls can be erected quickly and without retarding production and efficiency in war plants, and Army, Navy and Air Corps projects.

General Description

There are several different types of J-M Transite Walls, but all utilize the rugged asbestos cement product which for more than a quarter of a century has been widely used by industrial plants for both interior and exterior application. Transite Walls have advantages of flexibility and adaptability to office requirements hitherto unobtainable in a movable type of partition—advantages which have simplified the problem of making changes to a remarkable degree and with minimum disturbance. Their modern lines and flush surfaces are in keeping with modern interior treatment; their natural finish, a pleasing gray, harmonizes with virtually any color scheme, although they may be waxed or painted on the job to match existing walls. They are made in both free-standing and ceiling-high types, with or without borrowed lights and with a complete line of all necessary accessories, including hardware, light frames, door bucks and doors. Doors are



Movable-yet rigid as a structural building wall.

available in two finishes—the natural product color to match the finish of the wall panels, or in wood veneer.

J-M Transite Asbestos Walls have these advantages—low cost, light weight, strength, ease of installation, entirely dry construction. No special tools are required, and walls can be relocated with 100% salvage. Wiring is easily accessible.

Application

The Johns-Manville staff of trained engineers, located in all principal cities is prepared to consult

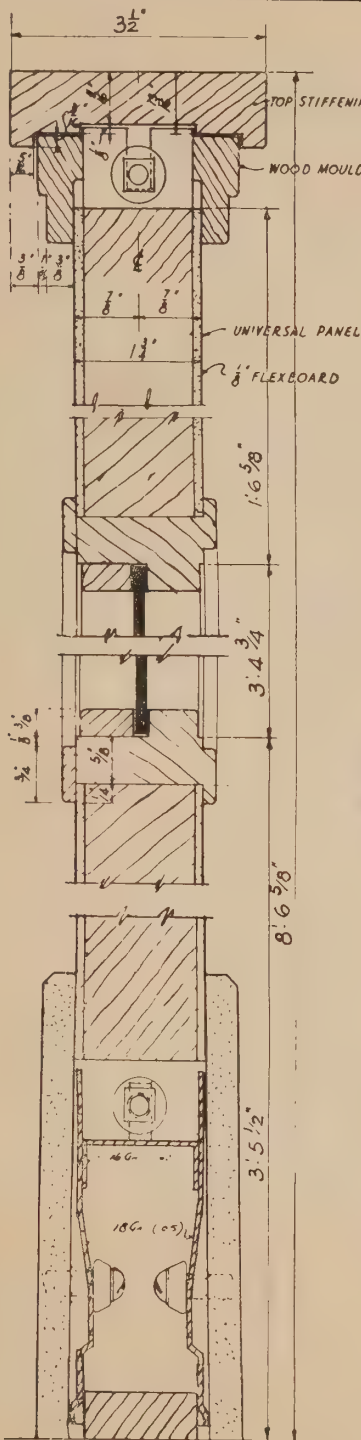


Transite movable partitions are quickly rearranged to meet new requirements.

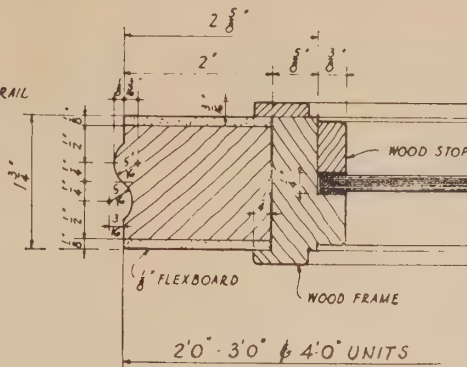
and advise on partition layouts and problems, furnishing costs and complete details without obligation. The actual installation of Transite Walls is handled by J-M Construction Units. Consult the J-M Office nearest you or write to Johns-Manville Corporation, 22 E. 40th Street, New York City.

Among the several types of Transite Walls is the Universal Type "W". It is being widely used today because of its great adaptability to partition layouts, quick installation and relocation. Panel framework, door bucks, doors, borrowed light frames, top stiffening rail, mouldings are all of wood construction. Details of the Type "W" are shown on the opposite page.

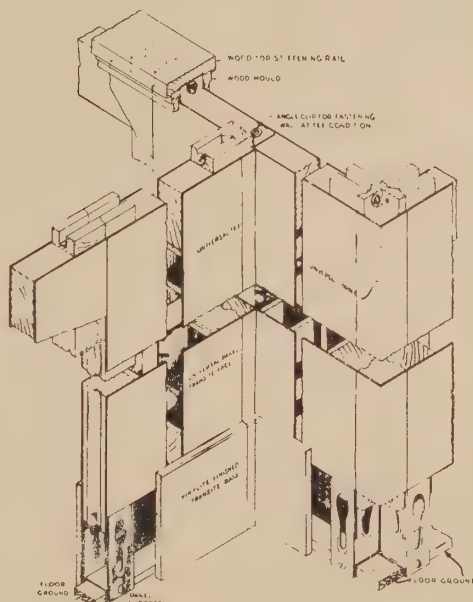
UNIVERSAL TYPE TRANSITE WALLS



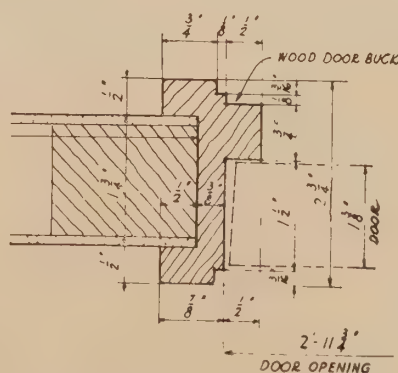
SECTION THRU
GLASS PANEL WALL



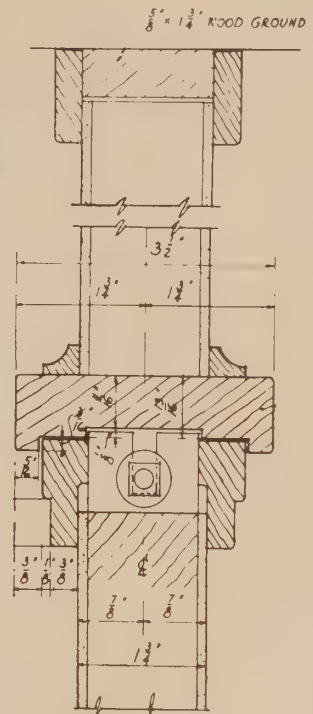
PLAN SECTION OF BORROWED
LIGHT FRAME IN UNIVERSAL PANEL



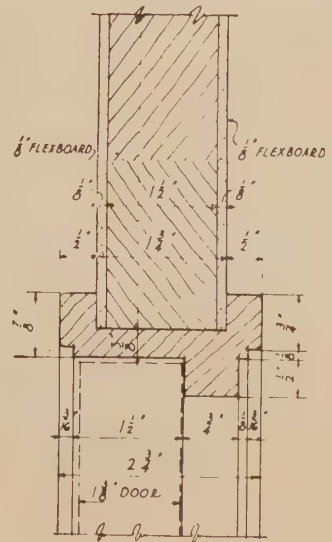
DETAILS OF CONSTRUCTION SHOWING ASSEMBLY OF UNIVERSAL WALL



PLAN SECTION OF DOOR BUCK



SECTION THRU
UNIVERSAL PANEL
TOP FILLER



SECTION AT HEAD
OF WOOD DOOR BUCK

J-M TRANSITE TOILET COMPARTMENTS

Uses

The most important requirement of any wash-room equipment is an easily cleaned, attractive surface, that will withstand abuse and that will need little if any maintenance. Because J-M Transite Toilet Compartments combine these features they are ideal for use in all types of washrooms.

General Description

J-M Transite Toilet Compartments are made of the same durable asbestos-cement material as Transite Walls, with a sanitary, easy to maintain surface. They are structurally strong and permanent, yet their cost is below that of any similar product of comparable character, finish and durability. Transite Compartments are architecturally correct for almost any washroom design and treatment. They are fireproof and are highly resistant to steam and hot water. Furthermore, being of mineral composition, there is nothing in them to rot or decay.



Transite Toilet Compartments are neat, sturdy durable, and always sanitary.

Sizes and Finish

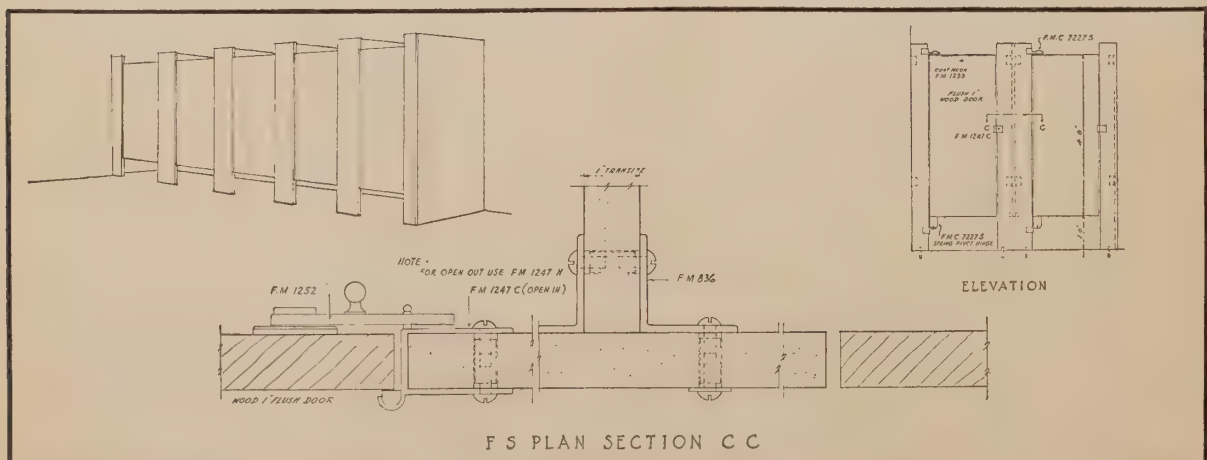
J-M Compartments are built of 1" thick solid Transite Panels to the usual standard heights as shown in the details below. They are furnished

with a full line of hardware and necessary accessories. The standard finish is natural gray Transite, waxed at the factory.

Application

The installation of J-M Transite Toilet Compartments is handled in the same manner as Transite Movable Walls. J-M construction engineers are

located in all principal cities. For further information, call the nearest J-M Office or write to Johns-Manville Corporation, 22 E. 40th Street, New York.





J-M TRANSITE ASBESTOS PRESSURE PIPE

Johns-Manville Transite Asbestos Pressure Pipe has been used extensively in the construction of both permanent and temporary water supply systems in Army and Navy cantonments, air fields, and training centers.

J-M Transite Pressure pipe is manufactured from asbestos and cement which are converted during manufacture into a dense, homogeneous material. It offers the following outstanding advantages:

1. High carrying capacity due to its smooth interior surface.
2. Cannot tuberculate and reduce carrying capacity.
3. Highly resistant to soil corrosion.
4. Immune to electrolysis.
5. Tight flexible joints.
6. Resistant to vibration by virtue of its flexible joints.
7. Light weight permits easy handling and installation.

It is made in four pressure classes, designated as class 50, 100, 150, and 200 which indicate the maximum working pressure in lb. per sq. inch for which pipe is recommended. Furnished in 13 ft. lengths, from 2" to 36" diameter, inclusive.

Contractors have reported that J-M Transite



Transite Pressure Pipe cannot tuberculate.

Pressure Pipe has been installed at an unusually low cost due to its light weight and ease and speed of assembly at the Simplex Coupling.

Federal Specification: J-M Transite Pressure pipe meets all requirements of SS-P-351 dated Jan. 14, 1942.

J-M TRANSITE SEWER PIPE

The Army and Navy require facilities to handle large quantities of sewage in cantonments, training centers, etc. Transite Sewer Pipe is available for all kinds of gravity lines, including laterals, sub-mains, mains, intercepting sewers and outfall sewers in sanitary systems, storm sewers and combined lines. Like Transite Pressure Pipe, it is made of asbestos fibre and cement, subjected to heavy pressure to form a dense homogeneous material of unusual strength and durability. It is highly resistant to corrosion and immune to tuberculation and electrolysis. The method of manufacture also assures to the pipe a smooth interior surface which offers remarkably low resistance to the flow of the sewage.

With Transite Sewer Pipe, infiltration is markedly curtailed through a radical reduction in the number of joints and the use of especially designed couplings.



Transite Sewer Pipe has few joints.

The pipe is manufactured in 13 ft. lengths and in four classes: Class 1, Class 2, Class 3, and Class 4; for all kinds of gravity lines and for force mains in classes 50, 100, 150 and 200.

There is no Federal Specification covering J-M Transite Sewer Pipe.

J-M TRANSITE FLUE PIPE

J-M Transite Flue Pipe has been used extensively on large defense housing and other projects where flues are required to vent gas burning appliances.

It is made of asbestos and cement—therefore it is durable, fire resistant, and of pleasing appearance.

It has been approved by the National Board of Fire Underwriters for use with domestic gas burning appliances when the temperature does not exceed 550° F.

Furnished in round cross section in sizes from

2" to 12" inside diameter and in oval cross section in four sizes $2\frac{1}{4}" \times 4\frac{1}{4}"$, $2\frac{1}{4}" \times 6\frac{5}{8}"$, $2\frac{1}{4}" \times 9\frac{3}{4}"$, and $2\frac{1}{4}" \times 11\frac{1}{4}"$ all inside dimensions.

Couplings, elbows, tees, and other necessary fittings are furnished made of same material. A joint cement, Transite Flue Pipe Cement can be furnished for use in all pipe joints and masonry openings through which pipe pass.

There is no Federal Specification covering J-M Transite Flue Pipe.

J-M PIPE INSULATION

Johns-Manville is furnishing to the Army and Navy many kinds of insulation in a form suitable for insulating pipes carrying hot or cold fluids. The insulation which should be selected for a particular application depends on the requirements of the individual project.

For Low and High Temperature Lines (up to 600° F.)

J-M 85% Magnesia Pipe Insulation is the standard moulded insulation for lines carrying hot water or low pressure steam at comparatively low temperatures up to lines carrying fluids at low superheat and superheat temperatures.

J-M 85% Magnesia combines the high insulating qualities of basic carbonate of magnesia and asbestos, affording a light, efficient insulation which, under actual service conditions, has proved to be the most durable of moulded insulations.

It is manufactured in 3-ft. lengths in the following thicknesses: Standard, $1\frac{1}{2}"$, 2", $2\frac{1}{2}"$; Double Standard, and 3" (double layer) to fit standard pipe sizes. Also furnished for straight runs of copper tubing with diameters from $\frac{3}{8}"$ to 6".

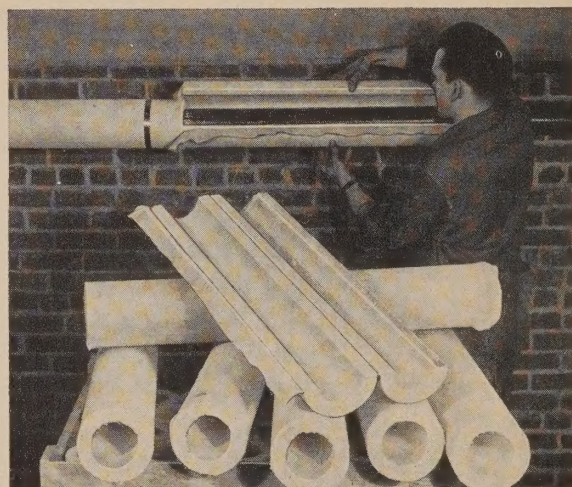
J-M 85% Magnesia Insulation is also manufactured in block and lagging form for flat, curved or irregular surfaces where temperature does not exceed 600° F. Blocks and lagging are easily cut and fitted.

Federal Specification. J-M 85% Magnesia meets all requirements of Federal Specifications HH-M-61 dated April 3, 1934 and E-HH-M-61 dated June 10, 1942.

Navy Specification. J-M 85% Magnesia meets requirements of Navy Specification 32P8 (Int.) dated Feb. 1, 1943, Grade I, Class a.

For Low Temperature Lines (up to 300° F.)

For low pressure steam, and hot water heating lines J-M has designed an improved cellular type



Applying 85% Magnesia Pipe Insulation.

of insulation, J-M Pre-Shrunk Asbestocel. This pipe insulation is made up of alternate layers of plain and corrugated asbestos felts. These felts are specially treated and moisture resistant thereby preventing "breathing" which is the cause of objectional shrinkage cracks.

It is furnished to fit standard pipe sizes, in 3 foot long sections in standard thickness of 2 to 8 plies, each ply approximately $\frac{1}{4}"$ thick. It can also be supplied in sections to fit straight runs of copper pipe or tubing.

Through the elimination of objectionable shrinkage the use of a non-canvas finish on cellular pipe insulation is now practical. With such finishes, according to numerous tests, the time involved in applying the insulation can be reduced at least one third.

Federal Specification. J-M Pre-Shrunk Asbestocel meets all requirements of Federal Specifications HH-I-561, Type III, dated Jan 1., 1943.



For Hot and Cold Water Lines.

J-M Pre-Shrunk Wool Felt Pipe Insulation is an effective and economical material for keeping hot water hot, for keeping cold water cold and to prevent sweating of cold water lines. Like Pre-Shrunk Asbestocel, J-M Pre-Shrunk Wool Felt is made of moisture-resisting felts which prevent the objectionable absorption of moisture in storage, thus minimizing drying shrinkage and pulling apart at the joints after application.

Another distinctive feature of J-M Pre-Shrunk Wool Felt is the dual-service liner—an asphalt-saturated felt. The waterproof quality of this felt liner makes J-M Wool Felt perfectly suited to cold water lines, and as the liner will withstand tempera-

tures as high as 225 deg. F., the material is equally satisfactory for hot water pipes.

The pipe insulation is available with a canvas finish. The sections are held tightly in place with bands which are quickly applied.

An integral waterproof jacket can be supplied with the insulation when so ordered.

In both finishes, J-M Pre-Shrunk Wool Felt is supplied in sections 3 ft. long, in thickness of $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", Double $\frac{1}{2}$ " and Double $\frac{3}{4}$ " for pipe sizes of $\frac{1}{2}$ " and larger. It is also furnished to fit straight runs of copper pipe and tubing of outside diameters from $\frac{3}{8}$ " up. The double layer construction of Double $\frac{1}{2}$ " and Double $\frac{3}{4}$ " thickness permits the breaking of all through joints.

J-M ROCK CORK

J-M Rock Cork is a low-temperature insulating material for use in Army and Navy food storage buildings, milk rooms, refrigerators and all rooms and structures where a low temperature condition is required to be maintained. It is manufactured from Banroc, a mineral wool, combined in production with a waterproof binder, moulded into sheet form and baked.

The exceptional success of Rock Cork, used since 1908 as an insulation for all kinds of cold-storage construction, is largely due to:

1. Retention of low conductivity at low service temperatures.
2. Non-absorption of moisture and odor.
3. Possibility of thorough sealing against penetration of air.
4. Immunity to termites, vermin and mold.
5. Structural strength to permit handling and applying without breakage.
6. Ease of sawing and working on the job.

The conductivity of J-M Rock Cork is less than 0.33 B.t.u. per sq. ft., per deg. F. temperature difference per inch thick, per hour at mean temperatures below 75 deg. F.

Owing to the nature of its waterproof binder, Rock Cork furnishes an ideal base for an asphaltic adhesive or finish, assuring an air and moisture-resistant seal.

J-M Rock Cork sheets are furnished in the following standard sizes and thicknesses: 18" x 36", in thicknesses of 1", 1½", 2", 3" and 4". Other sizes, within these limitations, and intermediate thicknesses can be furnished on special order. Manufactured also in sectional form for refrigerated piping.



Rock Cork sheets form a thorough seal.

Rock Cork is also manufactured in granular form for use where an insulation which can be poured into place is desired. Granulated Rock Cork should be packed to a density of 12 to 14 lb. per cu. ft. Furnished in 35-lb. paper bags and in burlap bags of random weights.

J-M Rock Cork is applied in accordance with the specifications which have been developed and found sound during many years of experience with this material on all kinds of refrigeration work. Application of Rock Cork by J-M Insulation Service Units is made in accordance with these specifications. Consult J-M Sales representative or nearest J-M Office (see map, page 2).

Federal Specification: This material meets all requirements of Federal Specification HH-M-371 dated Oct. 29, 1938.

